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Illustrations and Keys to the Tremellaceous Fungi of Louisiana

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The interesting group of fungi generally included in the Tremellales and commonly called jelly fungi because of the gelatinous nature of many species, is well represented in Louisiana, although relatively little attention has been given them until recently. Sufficient information concerning their occurrence and variety is now at hand to justify the presentation of a summary of our knowledge of the group. It is therefore the purpose of this paper to record the species known to occur in the state and to show something of their diversity by including illustrations of representative genera. By use of the appropriate keys it should be possible to identify all the tremellaceous fungi which have thus far been reported from Louisiana.

Patouillard (21) was the first to emphasize basidial morphology as a character of fundamental importance in the taxonomy of Basidiomycetes. Subsequently, in attempting to explain their origin and phylogenetic relationship to other fungi, investigators interpreted the morphology of the basidium in different ways. Although it is not the intent of the writer to review these interpretations, the question is one of much historical interest. For an appreciation of some of the work that has been done in this area of research, the papers of Juel (8), Neuhoff (17), Bourdot and Galzin (2), Donk (6), Rogers (23), Martin (14), Linder (9) and Heim (7) should be consulted.

The Basidiomycetes are divided into two subclasses, the Heterobasidiomycetes and the Homobasidiomycetes. The former include the tremellaceous fungi, the rusts (Uredinales) and the smuts (Ustilaginales), whereas the latter include the Hymenomycetes and Gasteromycetes. In accordance with the classification of Martin (15), all tremellaceous fungi are here included in the order Tremellales. The chief criteria which characterize the Heterobasidiomycetes are based upon the morphology and inherent variability of the basidium and, with certain exceptions, the germination of basidiospores by the process of repetition. Basidia of this group may be transversely, obliquely or longitudinally septate and are susceptible to morphological changes dependent upon environmental conditions. When a basidiospore germin-

ates by repetition, it produces a more or less tubular process which becomes attenuated to form a sterigma at its extremity, upon which a smaller, secondary spore is borne and from which it is forcibly discharged. In contrast to these features, the Homobasidiomycetes are characterized by the morphological uniformity and relative stability of an aseptate basidium and by the absence of germination by repetition.

Many of the species are illustrated by drawings, photographs or by both, and an effort has been made to show diagnostic differences among various genera with special reference to basidial morphology.

Seventy-five species, representing seven families and twenty-three genera are included, together with keys and brief notes. Many of the species in this report are recorded from Louisiana for the first time.

KEY TO FAMILIES OF TREMELLALES

a. Basidia aseptate and furcate at maturity ..... *Dacrymycetaceae*
a. Basidia variously septate at maturity ..... *b*
  b. Epibasidia inflated, spore-like ..... *Tulasnellaceae*
  b. Epibasidia not inflated, more or less cylindrical ..... *c*
c. Basidia elongate, transversely septate ..... *d*
c. Basidia subglobose to pyriform, longitudinally septate ..... *Tremellaceae*
  d. Fructification arid, parisitic on scale insects ..... *Septobasidiaceae*
  d. Fructification not parasitic on scale insects ..... *e*
e. Basidia catenulate ..... *Sirobasidiaceae*
e. Basidia not catenulate ..... *f*
  f. Stipitate and capitate, not becoming gelatinous when wet. *Phleogenaceae*
  f. Resupinate with free margins to pulvinate or substipitate, usually gelatinous when wet ..... *Auriculariaceae*

DACRYMYCETACEAE

Fructification cerebriform, pulvinate, broadly effused or substipitate to stipitate, usually gelatinous to cartilaginous when wet, becoming tough and horny when dry; commonly some shade of yellow or orange; probasidia at first elongate-cylindrical, giving rise to two epibasidia; mature basidium becoming Y-shaped; basidiospores mostly allantoid, usually becoming septate and commonly germinating by the production of conidia.

KEY TO GENERA OF DACRYMYCETACEAE

a. Fructification parasitic on *Arundinaria* ..... *Dicellomyces*
a. Fructification saprobic ..... *b*
  b. Resupinate, without rooting bases; not gelatinous ..... *Cerinomyces*
  b. Not resupinate, often with rooting bases; usually gelatinous ..*c*
c. Pustulate, becoming broadly effused ..... *Arrhytidia*
c. Cerebriform to stipitate and capitate or horn-like ..... *d*
  d. Erect, slender and horn-like ..... *Calocera*
  d. Not slender and horn-like ..... *e*
e. Pulvinate to cerebriform or substipitate ..... *Dacrymyces*
e. Stipitate and capitate to spathulate ..... *f*
  f. Pileus pezizoid or spathulate; stalk slender, hymenium unilateral ..... *Dacryopinax*
  f. Pileus capitate; stalk broad, hymenium amphigenous ..... *Dacryomitra*

The genera *Dicellomyces*, *Cerinomyces*, *Arrhytidia*, *Calocera* and *Dacryomitra* are each represented in Louisiana by a single species and these may be briefly described as follows:

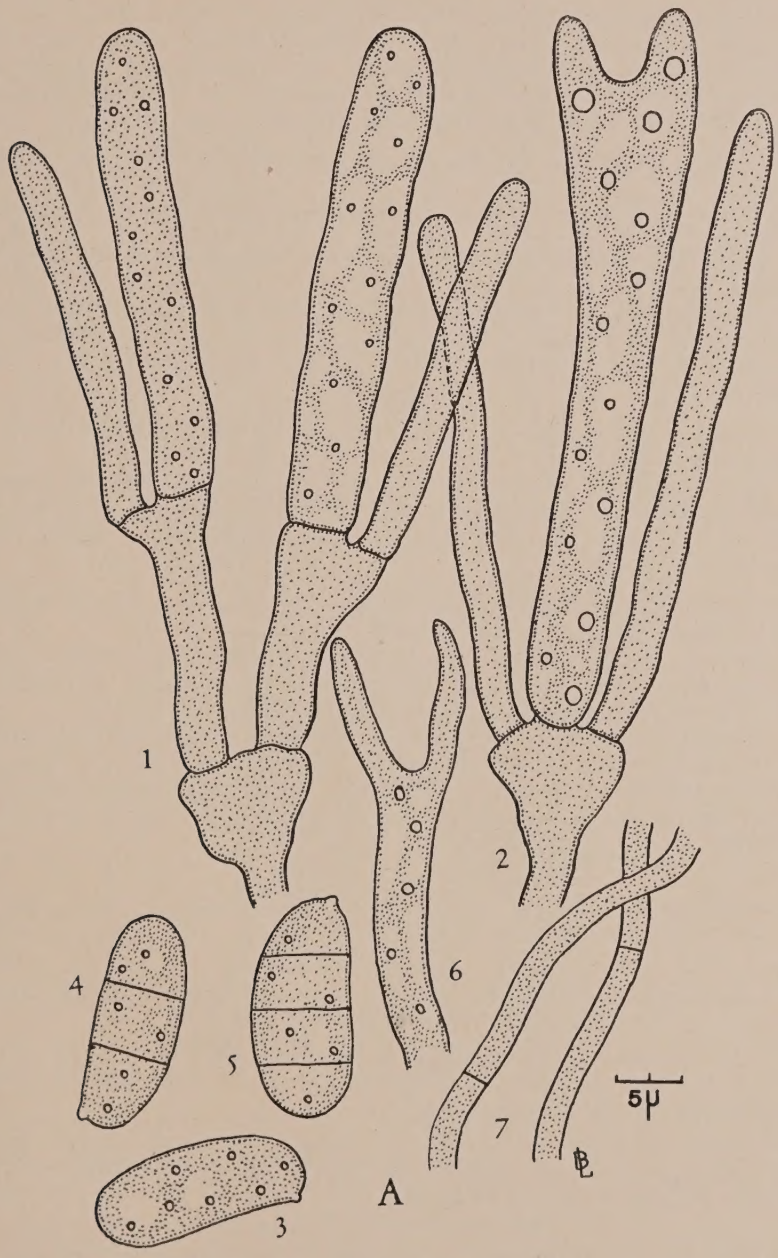


PLATE A.—*Arrhytidia involuta* (Schw.) Coker. 1. Group of two developing probasidia, each with a slender dikaryoparaphysis. 2. Probasidium becoming furcate by formation of epibasidia. Dikaryoparaphyses on either side. 3. Aseptate basidiospore. 4. 2-septate basidiospore. 5. Mature 3-septate basidiospore. 6. Distal two-thirds of mature basidium. 7. Internal hyphae.

Dicellomyces gloeosporus Olive, Mycologia **37:** 543. 1945.

This fungus, a parasitic genus of the Dacrymycetaceae, was collected on leaves of *Arundinaria tecta* in the Baton Rouge area and in Hammond, La. The small greyish to cream-colored fruiting bodies are firm-gelatinous when fresh, becoming yellowish when dry.

Cerinomyces crustulinus (Bourd. & Galz.) Martin, Mycologia **41:** 85. 1949.

The waxy fructifications of this fungus were collected by Olive (20).

Arrhytidia involuta (Schw.) Coker, Jour. Elisha Mitchell Soc. **43:** 237. 1928.—Plate A.

Fruiting bodies resupinate, forming small, irregular, thin, rust-colored, flake-like patches when dry. Collected on dead branches of frondose wood and cypress, in Baton Rouge and Goodwood, La. Not common.

Calocera cornea (Fries) Loudon, Encycl. Pl. 1012. 1829.—Plate 1, fig. 3 and Plate B.

The typically erect, yellowish-orange fruiting bodies of this fungus makes it one of the easiest to identify on sight in the field, in either the wet or dry condition. Common in and around Baton Rouge and Goodwood, La.

Dacryomitra stipitata (Peck) Burt, Ann. Mo. Bot. Gard. **8:** 387. 1921.—Plate 3, figs. 2, 3 and Plate D.

Fruiting bodies in the fresh condition bright orange, with a more or less gyrose head when wet, borne on a broad stalk. Collections from Denham Springs, Varnedo and Baton Rouge, La.

Two photographs of this species are included to show the appearance of the fungus when seen in the wet and in the dry condition. Equally striking differences in response to environmental conditions commonly occur among many tremellaceous fungi which have a gelatinous consistency.

KEY TO SPECIES OF DACRYOPINAX

a. Fructification spathulate, orange to yellow; spores 1-septate....*D. Spathularia*
a. Fructification pezizoid, brown; spores 3-septate.....*D. elegans*

Dacryopinax Spathularia (Schw.) Martin, Lloydia **11:** 116. 1948.
Guepinia Spathularia (Schw.) Fr.

This species is common in the vicinity of the L.S.U. campus and is found on both coniferous and frondose wood. Collections also from Goodwood and Zimmerman, La.

Dacryopinax elegans (Berk. & Curt.) Martin, Lloydia **11:** 116. 1948.—Plate 2, fig. 2 and Plate E.
Guepinia elegans Berk. & Curt.

The distinctive pezizoid appearance of this fungus is sufficient to distinguish it in the field. Common in the Baton Rouge area. Also collected in Krotz Springs, Opelousas and Lafayette, La.

It is of interest to note that all the species of *Dacrymyces* described

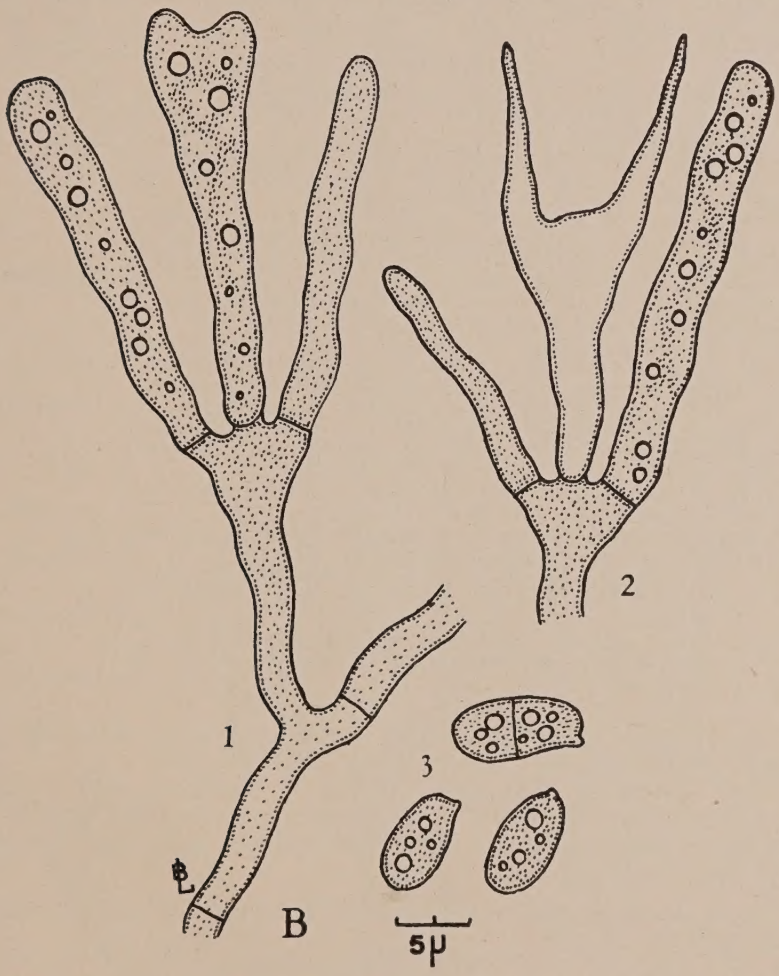


PLATE B.—*Calocera cornea* (Fries) Loudon. 1. Group of three developing probasidia. 2. Group of 3 basidial elements, central figure showing mature empty basidium. 3. Group of 3 basidiospores.

by Brasfield (3) as occurring in temperate North America have been found by the writer in Louisiana. Most of these are common in the vicinity of Baton Rouge, including a new species recently described (13). The following key to the species has been slightly modified after Brasfield. The papers of Coker (4) and Martin (15) have also been freely consulted.

KEY TO SPECIES OF DACRYMYCES

a. Fructification becoming pulvinate, corrugated or pezizoid, but not with erect lobes; mostly under 5 mm. in diameter, becoming larger by confluence.....*b*
a. Fructification cerebriform or lobed; mostly 1 cm. or larger....*f*
  b. Pale yellow to bright orange-yellow, drying orange to reddish; usually on coniferous wood.....*c*
  b. Dark or olivaceous when young, dull orange when older, drying dark and inconspicuous; usually on frondose wood..*e*
c. Spores indistinctly 1–3 septate; clamp connections conspicuous; dikaryoparaphyses protruding.....*D. punctiformis*
c. Spores distinctly 1–3 or more septate; clamp connections absent or inconspicuous; dikaryoparaphyses not protruding.....*d*
  d. Pale lemon-yellow; flat turbinate; substipitate; spores plump, 5–6 (–8)-septate, the septa not thick and gelatinous.*D. stillatus*
  d. Orange-yellow; sessile or attached by a point; spores 1–3-septate, the septa and walls thick and gelatinous....*D. deliquescens*
e. Pale greenish amber, becoming orange, up to 3 mm. in diameter; pulvinate, smooth or sparingly convolute; sessile or attached by a central point; spores mostly 11–15 μ in length.....*D. minor*
e. Dull olive-green; up to 5 mm. in diameter; much convoluted; firm-gelatinous; spores mostly 7–10 μ in length.....*D. fuscominus*
e. Dark brown at first, drying black; pulvinate, becoming wrinkled when dry; spores mostly 16–22 μ in length.....*D. nigrescens*
  f. Bright orange-yellow or wine color; soft; becoming watery; internal hyphae rough; spores 3-septate; usually on frondose wood.....*D. Ellisii*
  f. Bright orange to orange-red; firm-gelatinous; internal hyphae smooth; spores mostly 7 (–9)-septate; usually on coniferous wood.....*D. palmatus*

Dacrymyces punctiformis Neuh. Schweiz. Zeit. f. Pilzk. **12:** 81. 1934.—Plate 3, fig. 2.

This species of *Dacrymyces* is rather inconspicuous, especially upon drying, when it forms small, discrete, amber-colored patches on coniferous wood. Common in the Baton Rouge area, Lafayette and Natchitoches, La.

Dacrymyces stillatus Fries, Syst. Myc. **2:** 230. 1822.—Plate 2, fig. 1 and Plate C.

D. abietinus (Pers.) Schroet.

Many of the specimens of this fungus collected by the writer in Louisiana have been somewhat larger than usually recorded for the species. In one collection, the fruiting bodies measured up to 8 mm. in diameter. The dimensions of the microscopic structures however, were well within the normal range of variation. Common in Baton Rouge, on coniferous wood.

Dacrymyces deliquescens (Mérat) Duby, Bot. Gall. 729. 1829.

The orange colored, firm-gelatinous, pulvinate fruiting bodies of this species have been collected mostly on frondose wood. Common in Baton Rouge, Alexandria and near Natchitoches, La.

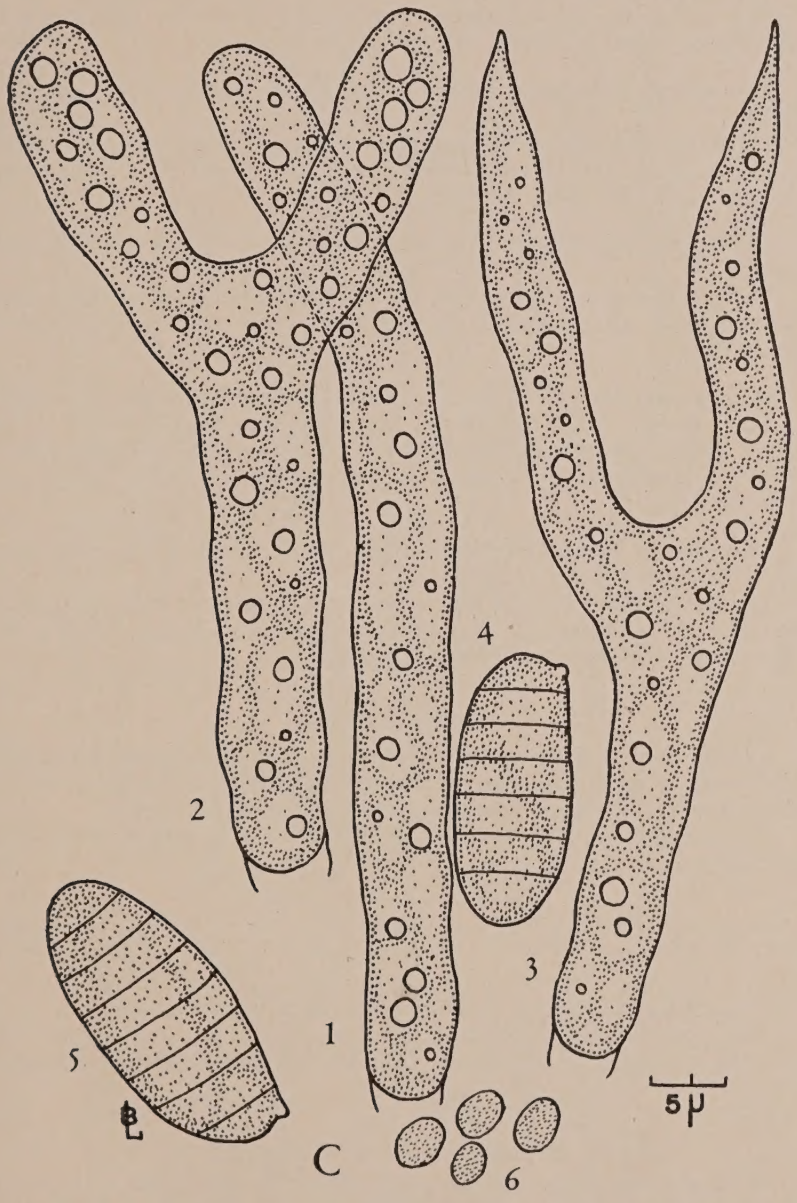


PLATE C.—*Dacrymyces stillatus* Fries. 1. Probasidium. 2. Basidium with developing epibasidia. 3. Mature basidium. 4. 6-septate basidiospore. 5. 7-septate basidiospore. 6. Group of 4 conidia.

Dacrymyces minor Peck, Ann. Rep. N. Y. State Mus. **30:** 49. 1877.
The yellowish, soft-gelatinous fructifications of this fungus occur on frondose wood in Baton Rouge. Not common.

Dacrymyces fuscominus Coker, Jour. Elisha Mitchell Soc. **35:** 171. 1920.
The dark, greenish color of this species makes it distinctive when seen in the fresh condition in the field. Collected near Baton Rouge, La. on frondose wood. Not common.

Dacrymyces nigrescens Lowy, Bull. Torrey Bot. Club. **81**(4)**:** 300–303. 1954.
This species, one of the few dark-colored members of the genus, becomes black and wrinkled when dry. Found on frondose wood in Baton Rouge.

Dacrymyces Ellisii Coker, Jour. Elisha Mitchell Soc. **35:** 167. 1920.
This fungus is usually deeply rooted to the substrate. It fades from a bright orange color in the fresh condition to a pale yellow as it becomes deliquescent. Common in the vicinity of Baton Rouge and Goodwood, La.

Dacrymyces palmatus (Schw.) Bres. Höhn. Oesterr. Bot. Zeitschr. **54:** 425. 1904.—Plate 1, fig. 1.
The writer has collected this species of *Dacrymyces* more frequently than any of the others. It is large and conspicuous and is found growing on both coniferous and frondose wood.

TULASNELLACEAE

Fructification gelatinous to waxy, resupinate and effused; probasidia subglobose to pyriform; mature basidia producing inflated, spore-like epibasidia; basidiospores aseptate, germinating by repetition.
The family is represented in Louisiana by a single genus and two species.

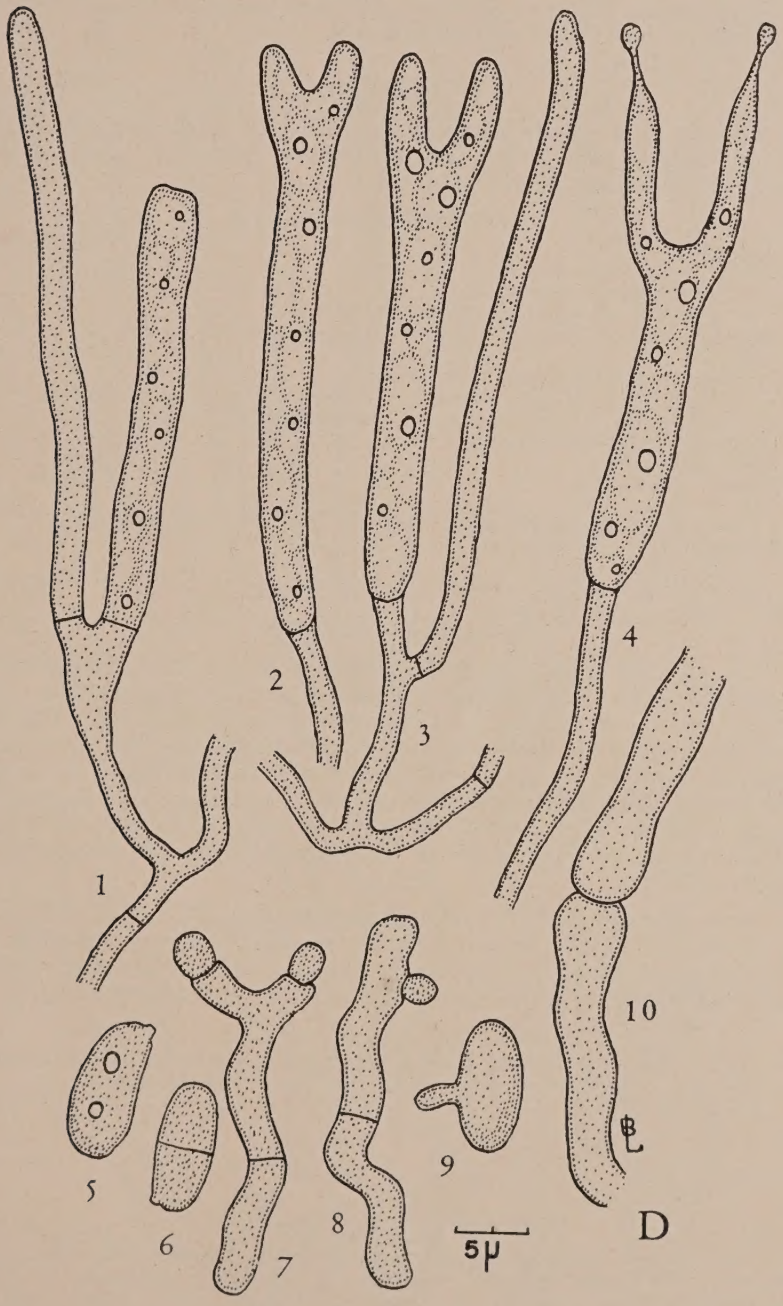
KEY TO SPECIES OF GLOEOTULASNELLA

a. Spores allantoid.....*G. Rogersii*
a. Spores subglobose to ovate.....*G. pinicola*

Gloeotulasnella Rogersii Olive, Mycologia **43:** 688. 1951.
This species, characterized by its production of allantoid spores, was collected on corticate and decorticate frondose wood near Baton Rouge.

EXPLANATION OF PLATE D

PLATE D.—*Dacryomitra stipitata* (Peck) Burt. 1. Probasidium and slender dikaryoparaphyses with homogeneous contents. 2. Early stage in formation of epibasidia. 3. Further development of epibasidia. 4. Mature basidium with young basidiosopores forming on summit of sterigmata. 5. Aseptate basidiospore. 6. 1-septate basidiospore. 7. Conidiophore with conidia forming terminally. 8. Conidiophore with conidium being produced laterally. 9. Basidiospore germinating by germ tube. 10. Internal hyphae.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Gloeotulasnella pinicola (Bres.) Rogers, Ann. Myc. **31:** 199. 1933.
This fungus, collected by Olive (19), was found growing on a dead oak limb in the vicinity of Baton Rouge.

TREMELLACEAE

Fructification mostly gelatinous; probasidia subglobose, becoming cruciate-septate and giving rise to tubular epibasidia; basidiospores aseptate, germininating by repetition.

KEY TO GENERA OF TREMELLACEAE

a. Hymenium spiny.....*Pseudohydnum*
a. Hymenium without spines.....*b*
b. Fructification resupinate.....*c*
b. Fructification pulvinate to substipitate.....*e*
c. Hymenium usually with conspicuous and numerous sterile hyphal pegs.....*Heterochaete*
c. Hymenium without sterile hyphal pegs.....*d*
d. Hymenium papillate, arising from a fragile subiculum.....*Stypella*
d. Hymenium smooth to ridged or tuberculate, with a waxy, tough or gelatinous texture.....*Sebacina*
e. Spores allantoid.....*Exidia*
e. Spores subglobose.....*Premella*

The genera *Pseudohydnum* and *Stypella* are each represented in Louisiana by a single species.

Pseudohydnum galatinosum (Fries) Karst. Not. Faun. Fl. Fenn. **9:** 374. 1868.—Plate 6, fig. 2.
Tremellodon gelatinosus Fr.

The species is readily distinguished from all other members of Tremellaceae by virtue of its tooth-bearing, tough-gelatinous hymenium simulating the appearance of a member of the Hydnaceae. This interesting fungus has been reported from various northern as well as tropical areas, but as far as the writer is able to determine, this is the first record of its occurrence in Louisiana. Collections were repeatedly made from a rotting stump of *Pinus* sp. near the L.S.U. campus, where it was found growing beside a large specimen of the myxomycete *Lindbladia effusa.*

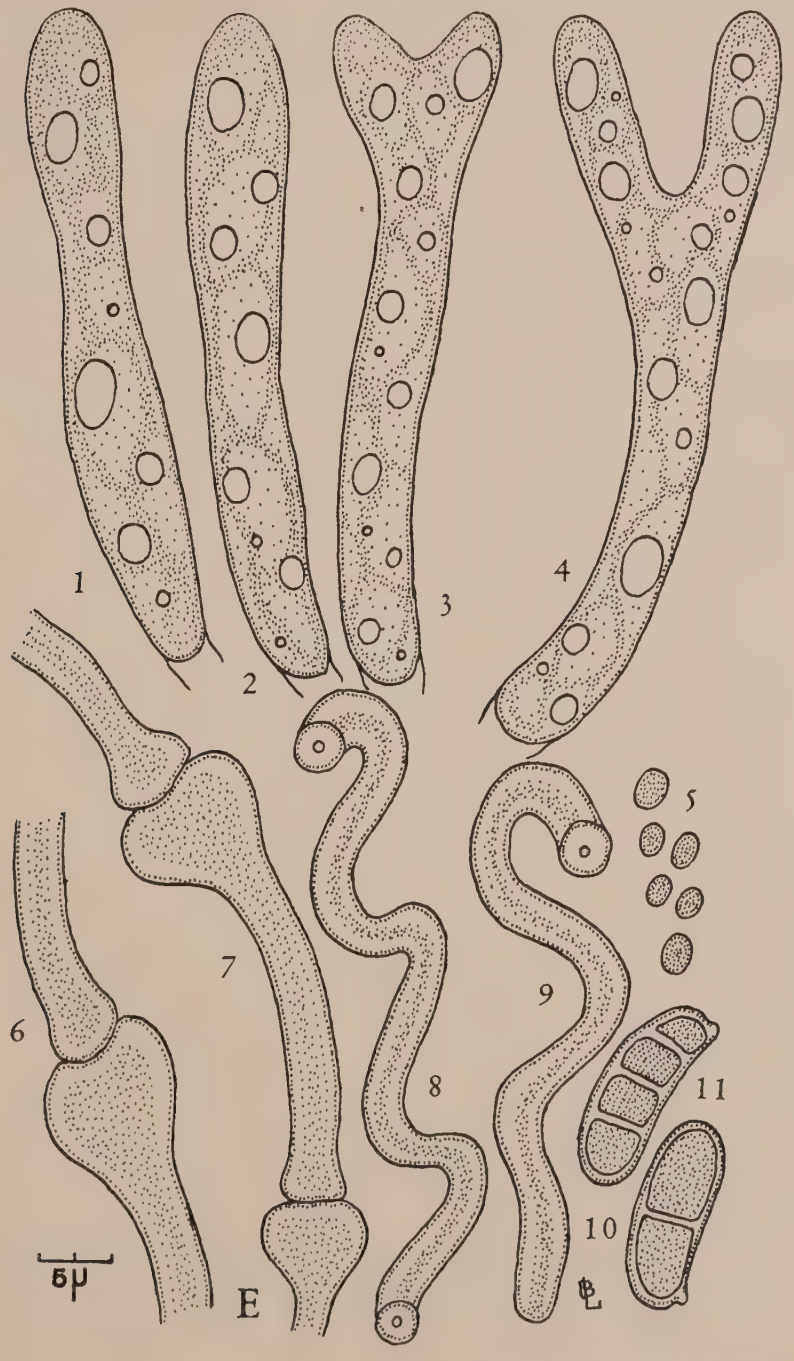
Stypella minor A. Möller, Protobasidiomyceten 77. 1895.—Plate I.
A single collection of this delicate, resupinate fungus was made in the Kisatchie National Forest near Gorum, La. In the fresh condition, it has a frosty white appearance which disappears upon drying.

KEY TO SPECIES OF HETEROCHAETE

a. Fructification with a pinkish tinge; basidia 3-septate; spores 16–18 μ.....*H. andina*
a. Fructification brownish-ochraceous; basidia 1-septate; spores 12–14 μ.....*H. Shearii*

EXPLANATION OF PLATE E

PLATE E.—*Dacryopinax elegans* (Berk. & Curtis) Martin. 1–2. Probasidia showing normal morphological variation. 3. Epibasidia beginning to form. 4. Nearly mature basidium. 5. Group of 6 conidia. 6–7. Internal hyphae with prominent bulbous enlargements. 8–9. Coiled hyphae. 10. 1-septate basidiospore. 11. Mature 3-septate basidiospore.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Heterochaete andina Pat. & Lagh., Bull. Soc. Myc. Fr. **8:** 120. 1892.
This species was reported from St. Martinville in 1899 by Langlois and from New Orleans in 1908 by F. S. Earle.

Heterochaete Shearii (Burt) Burt, Ann. Mo. Bot. Gard. **8:** 377. 1921.
Bodman (1) regards this species as one of the most commonly collected heterochaetes in the western hemisphere. It was collected in Louisiana by F. S. Earle.

Ten species of *Sebacina* have been reported from the state. Following the classification of McGuire (16) these may be identified by use of the following key.

KEY TO SPECIES OF SEBACINA

a. Distinctive, thick-walled, bristle-like cystidia present.....*S. dubia*
a. Cystidia, if present, never highly differentiated.....*b*
b. Gloeocystidia absent.....*c*
b. Gloeocystidia present.....*h*
c. Fructification fleshy to tough coriaceous; spores broadly ovate to subcylindric, never allantoid.....*S. incrustans*
c. Fructification soft gelatinous to waxy gelatinous; spores various, including allantoid.....*d*
d. Spores obovate to globose, tending to become transformed into angular resting cells.....*S. epigaea*
d. Spores subcylindric, cylindric, allantoid or subulate, not becoming transformed into angular resting cells.....*e*
e. Mature basidia typically raquet-shaped, with a stalklike base..*S. variseptata*
e. Mature basidia typically ovate to globose.....*f*
f. Fructification heavily pruinose; spores mostly over 13 μ...*S. plumbescens*
f. Fructification not pruinose; spores mostly under 13 μ.....*g*
g. Drying dull brown, to a parchment-like crust; spores allantoid, 10–13 μ.....*S. adusta*
g. Drying to a shiny yellow-brown crust; spores sub-cylindric to allantoid, 6–10 μ.....*S. podlachica*
h. Spores globose, mostly under 5 μ.....*S. Eyrei*
h. Spores ovate to subcylindric, mostly over 5 μ.....*i*
i. Fructification when dry, forming a grey crust; spores mostly over 7 μ.....*S. cinerea*
i. Fructification when dry, forming a brownish crust; spores mostly under 6 μ.....*S. deminuta*

Sebacina dubia (Bourd. & Galz.) Bourd., Ass. Fr. Av. Sc. **45:** 576. 1922.
The thick-walled cystidia are regarded by McGuire (16) as the most distinctive characteristic of this fungus. It has been reported from Louisiana by Olive (20).

Sebacina incrustans (Fr.) Tul., Jour. Linn. Soc. Bot. **13:** 36. 1871.
McGuire (16) states that this species is extremely variable and "appears as a resupinate incrustation over soil, debris and bases of small erect objects."

Sebacina epigaea (Berk. & Br.) Rea, Trans. British Mycol. Soc. **17:** 48. 1932.
The waxy-gelatinous fructifications of this fungus were reported by Olive (19) from a single locality in Baton Rouge, growing on a corticated oak limb and on old cow dung.

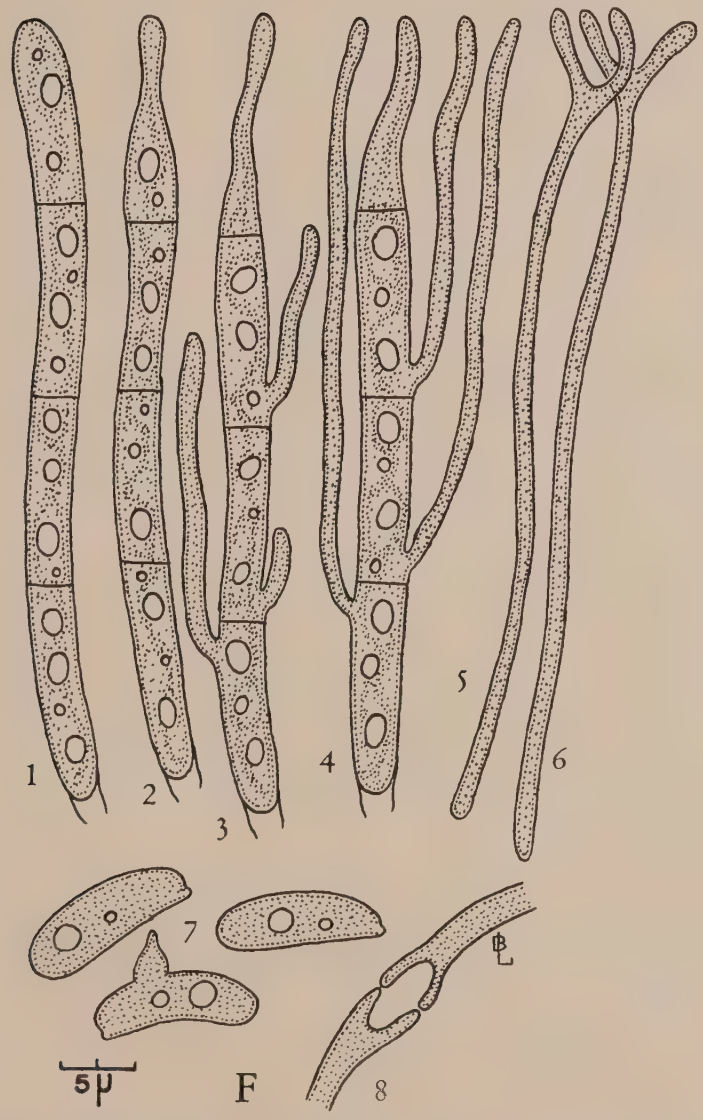

PLATE F.—*Auricularia fuscosuccinea* (Mont.) Farlow. 1. 3-septate basidium. 2. Basidium with terminal cell producing epibasidial extension. 3. All 4 cells of basidium with epibasidial extensions. 4. Mature basidium. 5–6. Two dikaryoparaphyses. 7. Group of 3 basidiospores, one germinating by repetition. 8. Internal hyphae.

Sebacina variseptata Olive, Mycologia **40:** 595. 1948.

Olive (19) considers this species to be most closely related to *S. adusta.* It was found on frondose wood at Avery Island, La.

Sebacina plumbescens Burt, Ann. Mo. Bot. Gard. **3:** 241. 1916.

This species is reported by McGuire as "drying to a very thin bluish-grey crust."

Sebacina adusta Burt., Ann. Mo. Bot. Gard. **2:** 164. 1915.

The collections of this fungus are characterized, macroscopically, by their dark brown color, drying black, a firm-gelatinous texture and effuse growth. Microscopically, irregular calcareous accretions are frequently found embedded in the gelatinous matrix. Common on rotten wood in the Baton Rouge region.

Sebacina podlachica Bres., Ann. Myc. **1:** 117. 1903.

The waxy, greyish-white fruiting bodies of this species dry to a brownish crust. Found in Baton Rouge and Shreveport on dead branches of frondose wood.

Sebacina cinerea Bres., Fundi Trid. **2:** 99. 1892.

The soft-waxy fructifications of this fungus were reported by Olive (19) from a single collection on decorticate oak wood in Baton Rouge.

Sebacina Eyrei Wakef., Trans. British Myc. Soc. **5:** 126. 1915.

Olive (19) reports this species occurring on frondose wood from Avery Island, La.

Sebacina deminuta Bourd., Ass. Fr. Av. Sci. **45:** 575. 1922.

McGuire describes this species as "drying to a greyish bloom, or in thicker fructifications to a continuous pruinose crust."

The following key to the species of *Exidia* is adopted with slight modification from Martin (15) and includes five of the six species described in that work. Most of these are common in the Baton Rouge area.

KEY TO SPECIES OF EXIDIA

a. Gloeocystidia present; white to pallid at maturity; firm in texture ..... *E. alba*
a. Gloeocystidia lacking; texture gelatinous ..... *b*
  b. White, becoming vinaceous; prominent calcareous accretions present, basidiospores 10–12 μ long ..... *E. nucleata*
  b. Early becoming dark, without calcareous accretions ..... *c*
  b. White at first, forming brownish patches; calcareous accretions absent; basidiospores 16–19 μ long ..... *E. compacta*
  b. Not with above combination of characters ..... *d*
c. Erect, pileate, without constricted stem-like base; hymenium inferior ..... *E. recisa*
c. Expanded, marginate, often anastomosing and becoming broadly effused ..... *d*
  d. Cinnamon-brown to blackish brown at maturity, centrally attached, with thick margins ..... *E. repanda*
  d. Black at maturity; thick, expanded-cerebriform, usually with prominent hymenial warts; resupinate when dry ..... *E. glandulosa*
  d. Usually white or whitish-hyaline at maturity ..... *E. tremelloides*

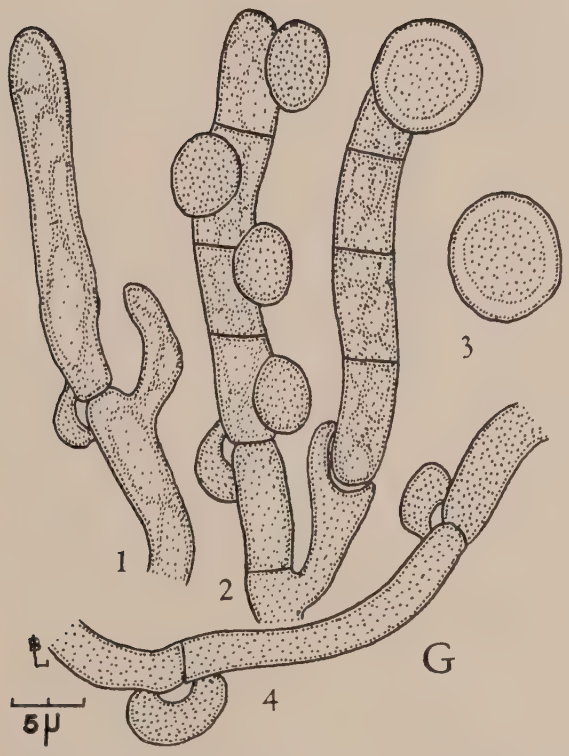

PLATE G.—*Phleogena faginea* (Fries) Link. 1. Probasidium with prominent clamp connections at base. 2. Group of 2 transversely septate basidia. Left-hand branch with 4 developing basidiospores; right-hand branch with 1 mature sessile basidiospore attached to terminal cell. 3. Detached basidiospore. 4. Hyphae showing clamp connections.

Exidia alba (Lloyd) Burt, Ann. Mo. Bot. Gard. **8:** 366. 1921.

In their early stages of development, the fruiting bodies of this species bear a striking resemblance to *Stypella* but the latter soon becomes confluent and effused. Found on branches of frondose wood in Baton Rouge. Not common.

Exidia nucleata (Schw.) Burt, Ann. Mo. Bot. Gard. **8:** 371. 1921.—Plate 6, fig. 1.

This *Exidia* is characterized by the presence of prominent, irregularly shaped calcareous accretions of various size imbedded in the gelatinous fruiting body. Common in Baton Rouge and Goodwood, La. on frondose wood.

Exidia compacta sp. nov.

Fructificatio firme gelatinosa, humida pulvinata, alba, non coalescens, 2.0−7.5 mm. in longit., ad 2–3 mm. in crassit.; sicca cornea, fuscobrunnea cum margine conspicuo; probasidia primum subglobosa, 9.2–10.6 × 10.8−11.5 μ, deinde ovata, 2—septata, 9.5−11×13.6 −16.4 μ; epibasidia cylindracea (26−) 34.4−48.6 (−55.5) ×2−2.7 μ; hyphae nodoso-septatae; dikaryoparaphyseae clavatae, 22.5–36.2×5.4−6.5 μ; basidiosporae aseptatae, allantoideae, apiculatae, hyalinae, (13.2−) 16.5−18.8×3.5−4.2 μ; per promycelium germinantes. In ligno demortuo crescit.

Fructification firm-gelatinous when wet, white, pulvinate; individual fruiting bodies 2.0−7.5 mm. broad, 2−3 mm. in thickness, not coalescing; drying to form brownish patches with well-defined margins; probasidia at first subglobose, 9.2−10.6×10.8−11.5 μ, becoming 2—septate at maturity, ovate, 9.5−11×13.6−16.4 μ; epibasidia cylindrical, (26−) 34.4−48.6 (−55.5) ×2−2.7 μ; hyphae septate with few clamp connections; basidiospores unicellular, allantoid, apiculate, hyaline, (13.2−) 16.5−18.8×3.5−4.2 μ; germinating by germ tube.

Ten miles south of Gonzales, Louisiana; on dead branches of *Quercus virginiana*. March 23, 1955. 1852 Type. Type deposited in the mycological herbarium of Louisiana State University with portions in the herbaria of the New York Botanical Garden and the State University of Iowa. Plate 4, figs. 1, 2. Plate 5.

The new species seems most closely related to *Exidia nucleata* (Schw.) Burt. The many significant differences between them, however, justify the description of the species under consideration as new.

The following macroscopic differences should be noted. *E. nucleata* characteristically has calcareous bodies embedded in the gelatinous matrix, which become most conspicuous when the fungus is dry (Plate 4, fig. 3). These bodies are lacking in the new species. The fruiting bodies of *E. nucleata* become effused, whereas those of the new fungus remain discrete. Upon drying, conspicuous lines of separation are formed in *E. compacta* where the margins of adjacent fruiting bodies have come into contact. *E. nucleata* upon drying, forms a thin, effused, horny film having somewhat the appearance of a stretched membrane. The new species when dry forms dense patches which may be resupinate or have free margins but without the mem-

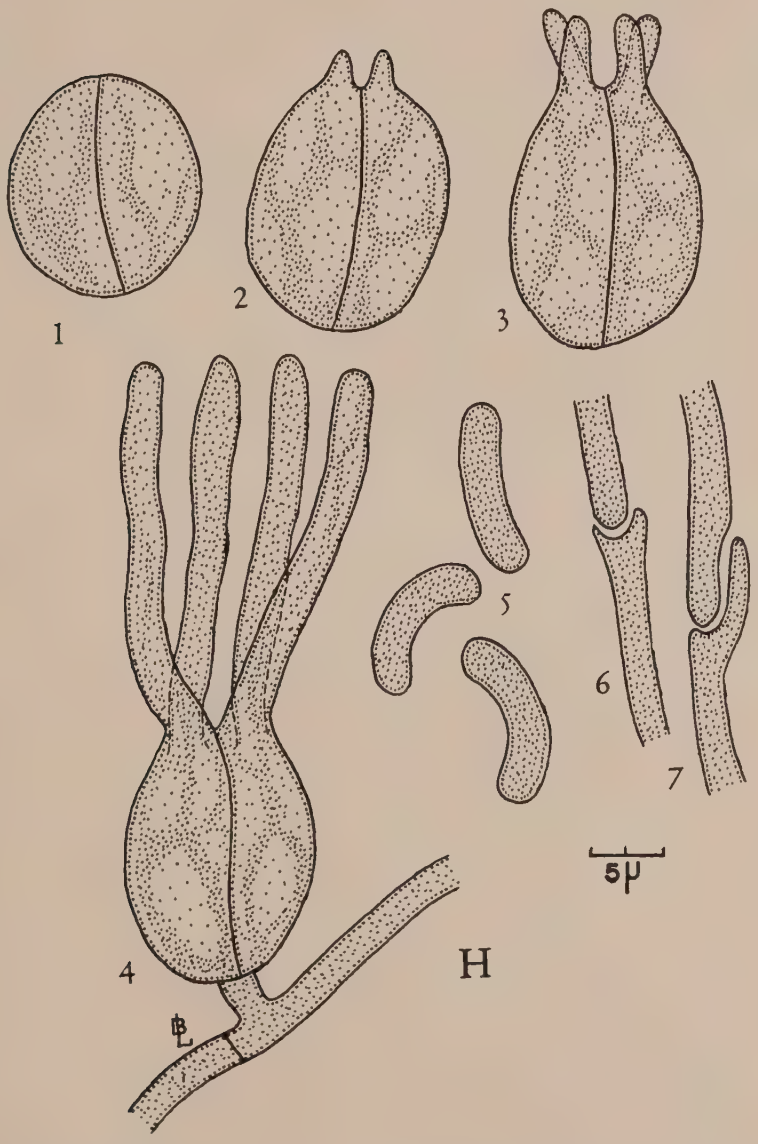

PLATE H.—*Exidia repanda* Fries. 1. 1-septate probasidium. 2. Basidium with epibasidia beginning to form. 3. Further development of epibasidia. 4. Basidium with nearly mature epibasidia. 5. Group of 3 mature basidiospores. 6–7. Hyphae showing clamp connections.

branous aspect of *E. nucleata*. Basidia and basidiospores of the new species are significantly larger than those of *E. nucleata*. Basidiospores of *E. nucleata* are about $10-12\times4-4.5\ \mu$ whereas those of *E. compacta* measure about $16-19\times3.5-4.5\ \mu$. Basidia of the new species measure $9-11\times13-16\ \mu$ in contrast to those of *E. nucleata* which are about $6-8\times9-12\ \mu$.

Mention should be made of a European species, *E. gemmata* (Lév.) Bourd. et Maire, which is very close to *E. nucleata*. The chief difference between them appears to be in the slightly larger basidiospores of *E. gemmata*, which, according to Neuhoff (18) are mostly $11.5–13\times 4.5-5.5\ \mu$.

Exidia recisa Fries, Syst. Myc. **2:** 223. 1822.

The dry, black, pileate fruiting bodies of this species are very common on fallen frondose branches in and around Baton Rouge.

Exidia repanda Fries, Syst. Myc. **2:** 225. 1822.—Plate H.

The brownish, gelatinous fructifications of this fungus, when wet, somewhat resemble a small *Auricularia*. Collected on dead frondose wood in Baton Rouge, La. Not common.

Exidia glandulosa Fries, Syst. Myc. **2:** 224. 1822.

This is probably the commonest *Exidia* and perhaps the most commonly encountered tremellaceous fungus in Louisiana. The broadly effused, black, resupinate fructifications frequently cover several centimeters of dead frondose wood.

Exidia tremelloides Olive, Mycologia **43:** 682. 1951.

Olive (19) characterizes this species as having spores intermediate in morphology between *Exidia* and *Tremella*. It was collected on various species of frondose wood in Baton Rouge, Avery Island and Lake Verret, La.

The nine species of *Tremella* indicated in the following key are known to occur in Louisiana.

KEY TO SPECIES OF TREMELLA

a. Fructification in dense, erumpent, dark-colored, moriform clusters *T. moriformis*
a. Fructification not in moriform clusters ..... *b*
  b. Without distinct fructification; parasitic on *Dacrymyces* .... *T. mycophaga* var. *obscura*
  b. Fructification conspicuous and gelatinous when wet; saprobic *c*
c. Up to 5 cm. in height, bright orange-yellow ..... *T. aurantia*
c. Usually less than 1 cm. in height ..... *d*
  d. Erect, white when fresh, with anastomosing lobes ..... *T. reticulata*
  d. Yellowish-orange or brownish, without anastomosing lobes *e*
e. Pale yellow, without hymenial conidia ..... *T. lutescens*
e. Bright orange, with hymenial conidia ..... *T. mesenterica*
  f. Cinnamon-brown, drying blackish, with thin foliate lobes; without hymenial conidia ..... *T. foliacea*
  f. Dark reddish-brown, without thin foliate lobes; with hymenial conidia ..... *T. rufobrunnea*
  f. Drying to a shrunken black layer; hymenium with brownish dikaryoparaphyses ..... *T. coalescens*

Tremella moriformis Berk. Outl. Brit. Fungol. 287. 1860.

This uncommon though striking species is easily recognized in the

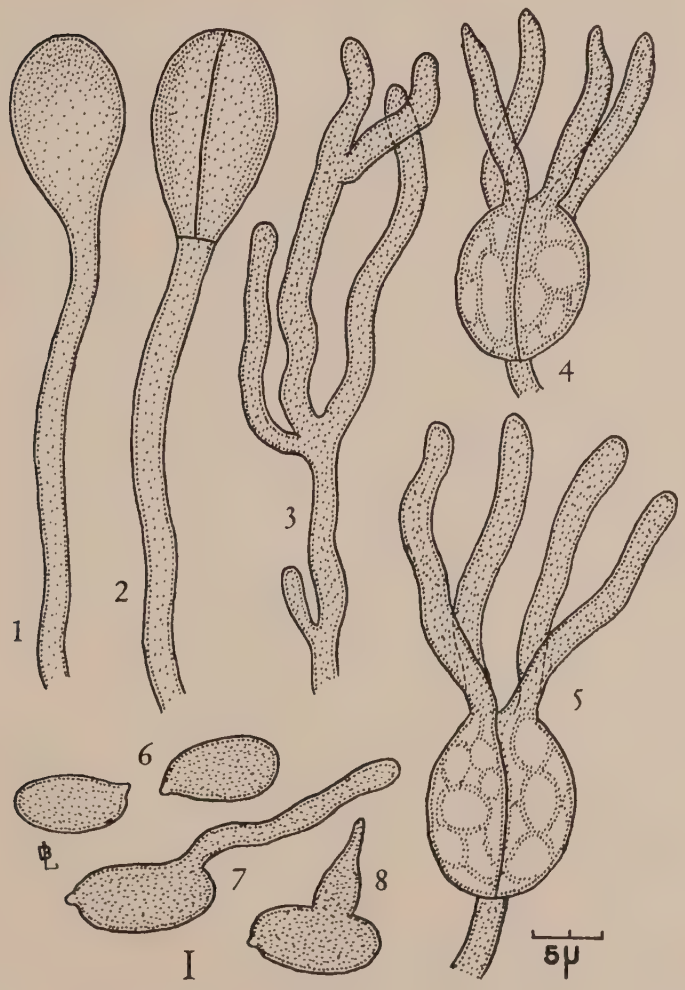

PLATE I.—*Stypella minor* A. Möller. 1. Probasidium. 2. Probasidium with longitudinal septum. 3. Branched dikaryoparaphysis. 4. Basidium with developing epibasidia. 5. Mature basidium. 6. 2 aseptate basidiospores. 7. Basidiospore germinating by germ tube. 8. Basidiospore germinating by repetition.

field because of its very tough, woody texture and its occurrence in dense, erumpent, dark clusters. Collected near Sorrento, La. on dead branches of *Fraxinus* sp.

Tremella mycophaga var. *obscura* Olive, Mycologia **38:** 540. 1946.
This fungus was reported by Olive as a parasite on *Dacryomitra stipitata*. Collected near Varnado, La.

Tremella aurantia Schw. ex Fries, Syst. Myc. **2:** 213. 1822.
The large, bright orange fructification of this species makes it easily identifiable in the field. Collected on dead frondose wood in Baton Rouge.

Tremella reticulata (Berk.) Farlow, Rhodora **10:** 12. 1908.
The erect white lobes of this fungus, at first discrete, tend to fuse as the fruiting body matures. Collections were made in Baton Rouge.

Tremella lutescens Fries, Syst. Myc. **2:** 213. 1822.
The pulvinate, pale yellow fructification of this species occur on dead frondose wood. Collected in Baton Rouge. Not common.

Tremella mesenterica Fries, Syst. Myc. **2:** 214. 1822.—Plate J.
This species is sometimes difficult to distinguish from *T. lutescens* in the field. The color of the fruiting body may easily be misleading. The production of conidia is a much safer criterion for their separation. Collected on dead frondose wood in Baton Rouge, Denham Springs, and Goodwood, La.

Tremella foliacea Fries, Syst. Myc. **2:** 212. 1822.
The dark brown gyrose fructification of this species was collected in Baton Rouge, on coniferous wood.

Tremella rufobrunnea Olive, Mycologia **40:** 591. 1948.
This fungus was described by Olive (19) as being closely related to *T. lutescens*. Collections were made on dead frondose wood at Avery Island, La.

Tremella coalescens Olive, Mycologia **43:** 678. 1951.
According to Olive (20), the fructifications of this species are *Exidia*-like. It was collected in Baton Rouge on corticate oak.

SIROBASIDIACEAE

Fructification saprobic; unique among tremellaceous fungi in producing catenulate, sessile basidiospores.

Sirobasidium sanguineum Lagh. & Pat., Jour. Bot. **6:** 465. 1892.
The single species of *Sirobasidium* from Louisiana has been reported by Olive (20) and Lowy (in press).

SEPTOBASIDIACEAE

Fructification parasitic on scale insects, producing a spongy or lichenoid growth; probasidia ovate and thick-walled; mature basidia cylindrical, straight or curved, becoming transversely septate; basidiospores germinating by the production of blastospores.

PLATE J.—*Tremella mesenterica* Fries. 1. Apical view of cruciate-septate basidium. 2. Longitudinally septate basidium with emerging epibasidia. 3. Basidium showing further development of epibasidia. 4. Basidium with nearly mature epibasidia. 5. Conidiophores and developing conidia. 6. A detached conidium. 7. Two mature basidiospores. 8. Hyphae with clamp connections.

In his monograph of the genus *Septobasidium*, Couch (5) indicates that sixteen species are to be found in Louisiana. The following key, adopted from Couch, includes those species known to occur in the state.

KEY TO SPECIES OF SEPTOBASIDIUM

I Basidia 2-celled, without presistent probasidia.....*S. Patouillardii*
II Basidia 2-celled, with persistent probasidia
a. Occurring on *Sabal minor*.....*S. sabalis* (Pl. 7, fig. 2)
a. Occurring on other plants.....*b*
b. Basidia 4.4 μ in diameter.....*S. Langloisii*
b. Basidia 6–7 μ in diameter.....*S. sinuosum*
III Basidia 3-celled, without persistent probasidia.....*S. apiculatum*
IV Basidia 4-celled, curved, without persistent probasidia..*S. rugulosum*
V Basidia 4-celled, straight, with persistent probasidia
a. Context with tall, distinct pillars.....*b*
b. Pillars unbranched.....*S. pseudopedicellatum*
b. Pillars branched.....*S. Marianii*
a. Context with pillars only fairly distinct.....*S. castaneum*
a. Context with short and stubby pillars.....*c*
c. Fructification white throughout.....*S. leprosum*
c. Fructification purplish-black throughout.....*S. Curtisii*
a. Contest without pillars; more than 500 μ in section.*d*
d. Texture tough.....*S. Burtii*
d. Texture fragile.....*S. fumigatum*
a. Context without pillars; less than 500 μ in section..*e*
e. Occurring on *Taxodium*.....*S. taxodii*
e. Occurring on other plants.....*S. fuscum*
VI Basidia 4-celled, curved, with persistent probasidia.....*S. pilosum*

PHLEOGENACEAE

Fructification non-gelatinous, stipitate and capitate; probasidia cylindrical, becoming transversely septate; basidiospores subglobose, sessile and thick-walled.

This family is represented in Louisiana by one genus with a single species, the only one known to occur in North America.

Phleogena faginea (Fries) Link, Handb. Gewächse **3:** 396. 1833.—Plate 3, fig. 1. Plate G. The stipitate fruiting bodies of this fungus, with their prominent subglobose heads are identifiable on sight in the field. Collected in Baton Rouge and Goodwood, La. on decorticated wood. This is the first report of its occurrence in Louisiana.

AURICULARIACEAE

Fructification mostly gelatinous to waxy; probasidia subglobose to cylindrical; mature basidia elongate, with distal end straight or curved, becoming transversely septate; epibasidia elongate, generally producing aseptate basidiospores, germininating by repetition, by germ tube or by conidia.

KEY TO GENERA OF AURICULARIACEAE

a. Fructification parasitic on mosses ..... *Eocronartium*
a. Fructification saprobic ..... *b*
b. Saccate, persistent probasidia formed ..... *Helicogloea*
b. Saccate probasidia never formed ..... *c*
c. Fructitification cerebriform-lobed, becoming extremely tough and woody upon drying ..... *Mylittopsis*
c. Fructification not as above ..... *d*
d. Fructification large, conspicuous, mostly substipitate to stipitate; superior surface pilose ..... *Auricularia*
d. Fructification small, less conspicuous; resupinate to pulvinate; not pilose ..... *e*
e. Basidia becoming easily detached ..... *Mycogloea*
e. Basidia not becoming detached ..... *Platygloea*

Eocronartium muscicola (Fries) Fitz. Phytopath. **8:** 498. 1918.

This fungus usually parasitizes the gametophytes of various mosses forming whitish, conspicuous fructifications on the host.

Two species of *Helicogloea* have been reported from Louisiana by Olive (19). These may be distinguished as follows:

KEY TO SPECIES OF HELICOGLOEA

a. Fructification parasitic on *Exidia glandulosa* ..... *H. longispora*
a. Fructification saprobic ..... *H. Lagerheimi*

Helicogloea longispora Baker, Mycologia **38:** 634. 1946.

This species was found parasitizing *Exidia glandulosa* growing on a corticate oak branch in Shreveport and Baton Rouge, La.

Helicogloea Lagerheimi Pat., Bull. Soc. Myc. Fr. **8:** 121. 1892.

The soft-gelatinous, greyish fructification of this fungus was found on a dead oak limb and on old leaf bases and fruiting stalks of the windmill palm near the L.S.U. campus.

Mylittopsis marmorata (Berk. & Curt.) Rogers, Mycologia **47**(6): 891–894. 1955.

The fungus is known in Louisiana only from its original collection made in 1895 by Langlois, who found it "on logs in wet woods."

Three species of *Auricularia* have been reported (11) from Louisiana. They may be distinguished as indicated in the following key.

KEY TO SPECIES OF AURICULARIA

a. Fructification without prominent medullary zone ..... *A. auricula*
a. Fructification with prominent medullary zone ..... *b*
b. Medulla about 50 μ thick, abhymenial hairs about 100 μ long ..... *A. fuscosuccinea*
b. Medulla about 250 μ thick, abhymenial hairs about 450 μ long ..... *A. polytricha*

Auricularia auricula (Hook.) Underw., Barrett, Mycologia **2:** 12. 1910.

A. Auricula-Judea (Fries) Schroet.

This species, the so-called "Judas Ear" is the least common member of the genus to be found in the state. Collected on frondose wood in Baton Rouge and Goodwood, La.

Auricularia fuscosuccinea (Mont.) Farlow, Bibl. Index **1:** 307. 1905.—Plate 7, fig. 1 and Plate F.

It is usually possible to distinguish this fungus in the field because of its rosy color in the fresh, expanded condition. Common in Baton Rouge and vicinity, on frondose wood.

Auricularia polytricha (Mont.) Sacc. Atti R. Institi. Veneto **6**(3): 722. 1885.

This *Auricularia* is an edible species and the most commonly encountered in Louisiana. Collected on frondose wood in Baton Rouge, Denham Springs, Natchitoches and Lafayette, La.

Mycogloea carnosa Olive, Mycologia **42:** 385. 1950.

This fungus has basidia which become detached when mature, distinguishing it from members of the genus *Platygloea*. Collected in Goodwood, La. on frondose wood.

Platygloea longibasidia Lowy, Mycologia **46:** 100. 1954.

This fungus, with gleaming white, gelatinous fruiting bodies, recently described by the writer (12), is the only species of the genus which has been reported from the state. It was collected in Goodwood, La. on frondose wood.

PLATE 1.—1. *Dacrymyces palmatus*, x 3. 2. *Dacrymyces punctiformis*, x 2. 3. *Calocera cornea*, x 2.

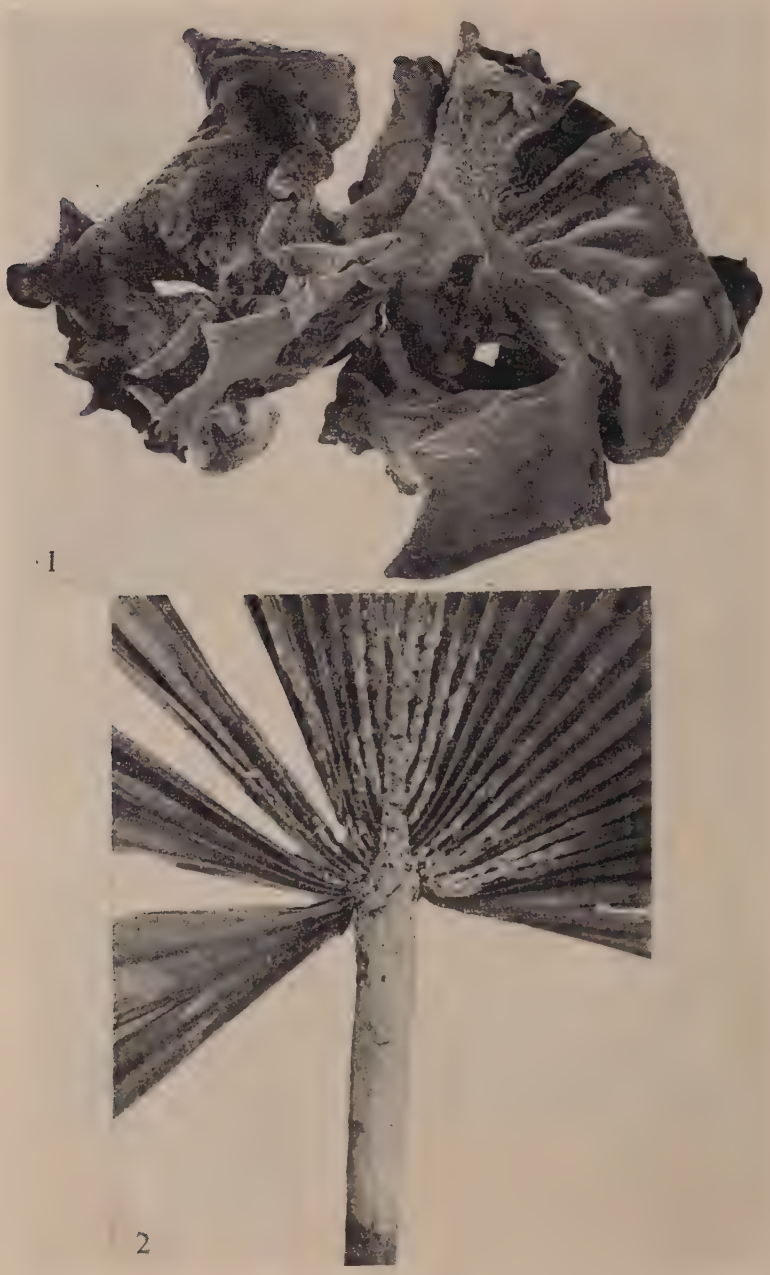

PLATE 2.—1. *Dacrymyces stillatus*, x 2. 2. *Dacryopinax elegans*, x 2.

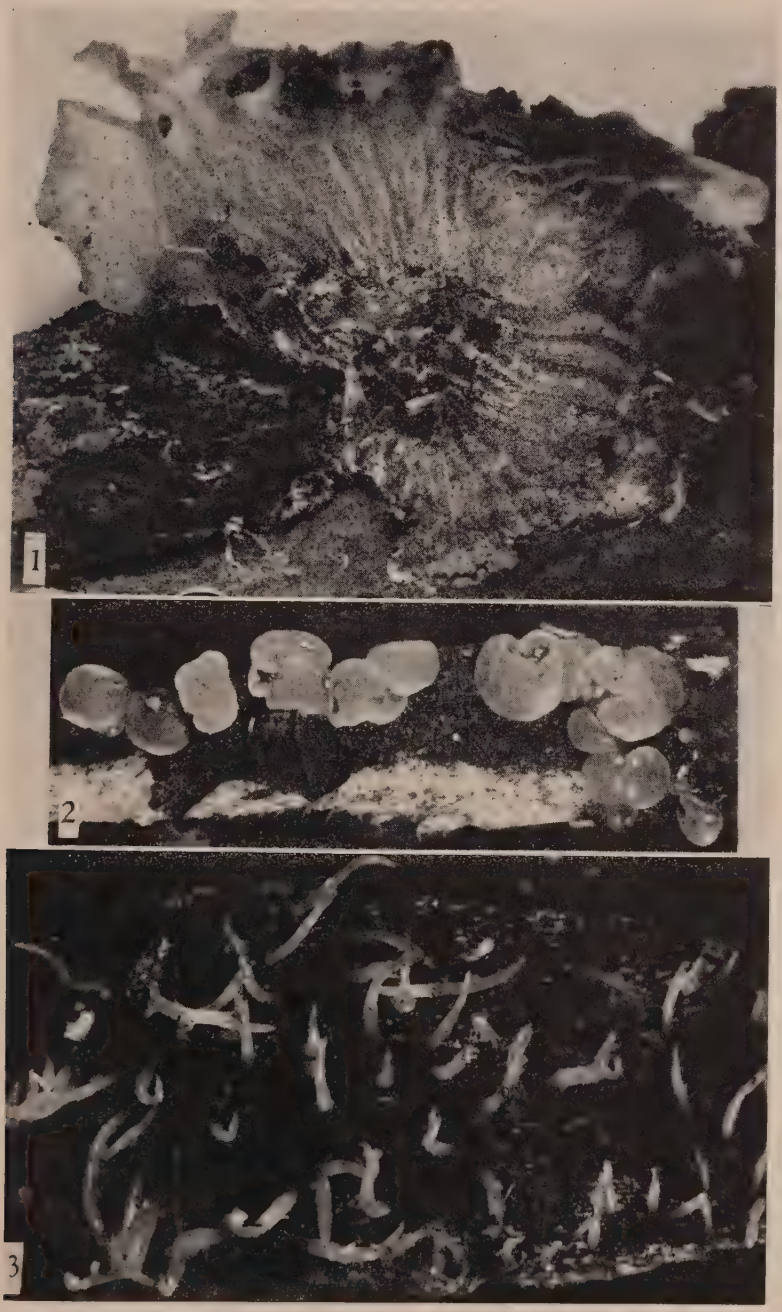

PLATE 3.—1. *Phleogena faginea*, x 4. 2. *Dacryomitra stipitata*, dry, x 1.5. 3. *Dacryomitra stipitata*, wet, x 1.5.

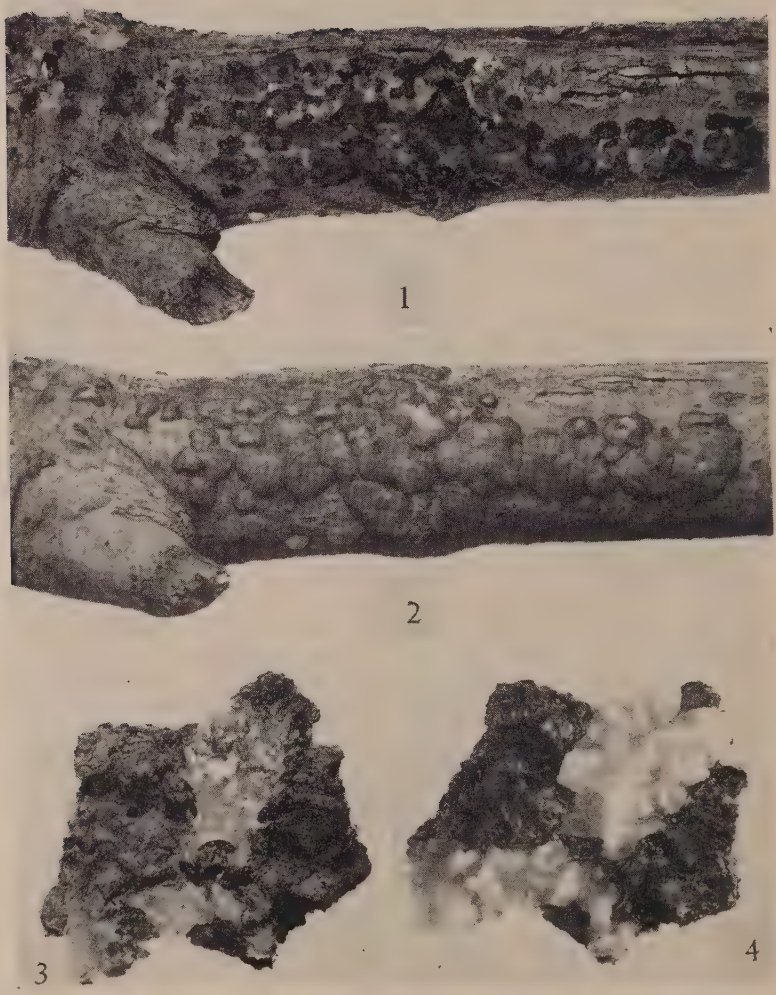

PLATE 4.—1. *Exidia compacta*. Dry. x 1.5. 2. *Exidia compacta*. Wet. x 1.5. 3. *Exidia nucleata*. Dry. x 1.5. 4. *Exidia nucleata*. Wet. x 1.5.

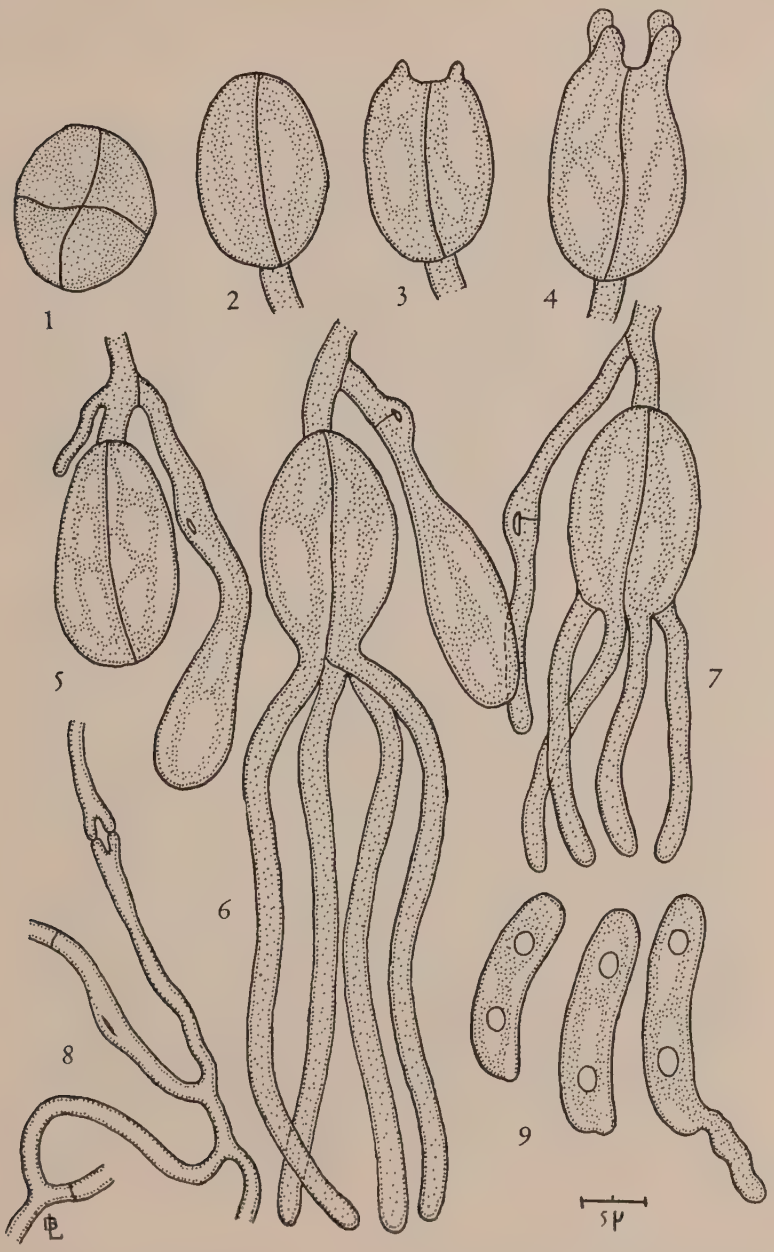

PLATE 5.—*Exidia compacta*, n. sp. 1. Probasidium divided into four cells. 2–4. Probasidia in different stages of development. Epibasidia beginning to form in figs. 3, 4. 5. Probasidia with dikaryoparaphysis. 6. Mature basidium with four epibasidia. 7. Maturing basidium with developing epibasidia. 8. Branching mycelium with clamp connections. 9. Three basidiospores, one germinating by germ tube; oil globules are prominent.

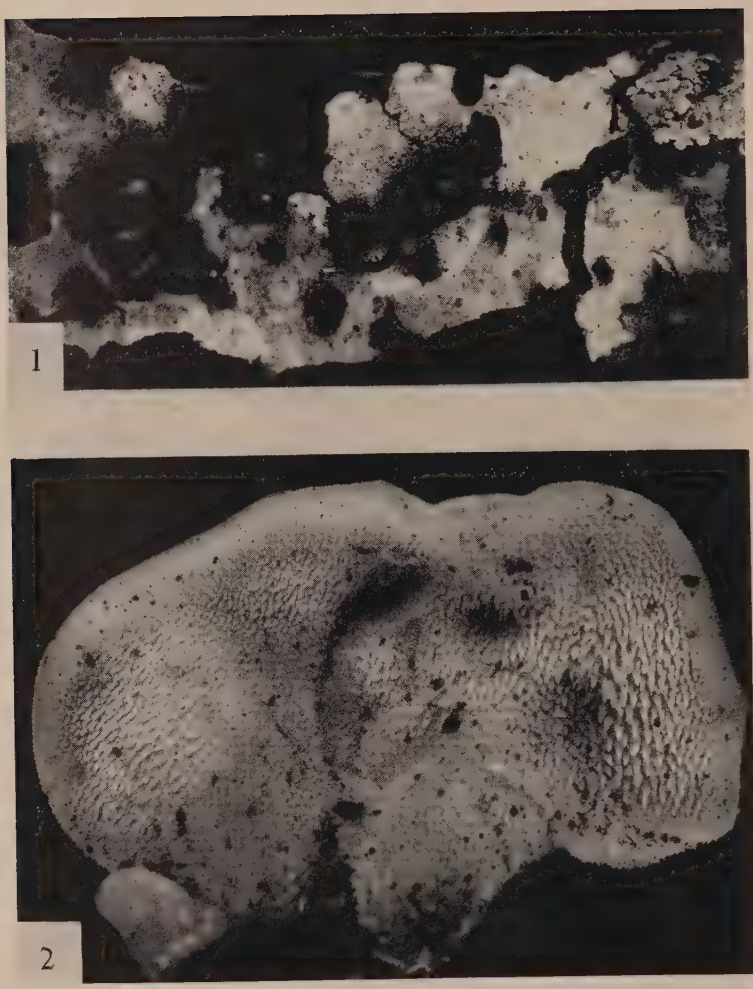

PLATE 6.—1. *Exidia nucleata*, x 2.5. 2. *Pseudohydnum gelatinosum*, x 2.

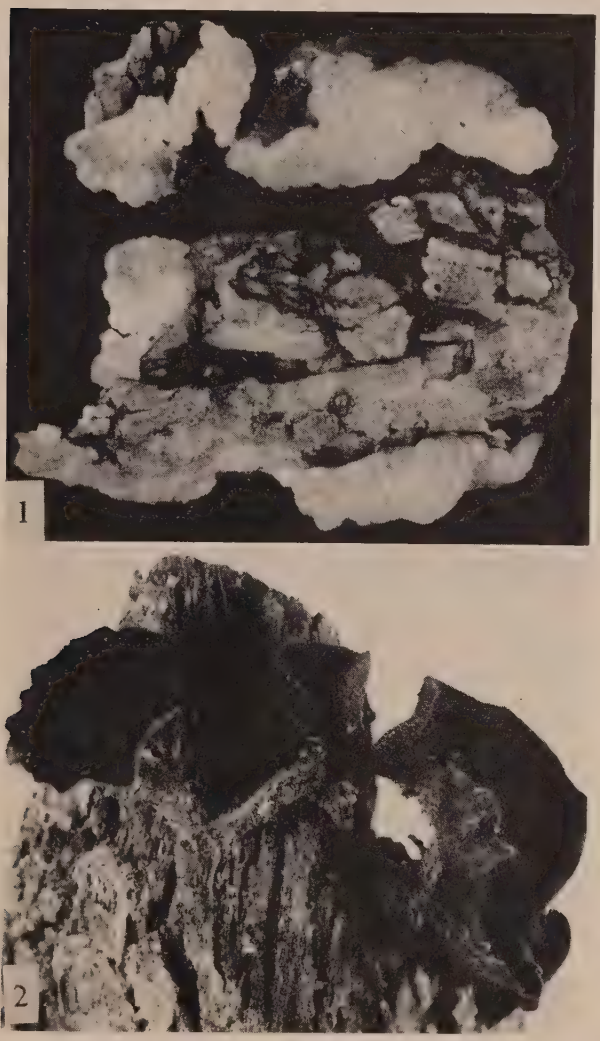

PLATE 7.—1. *Auricularia fuscosuccinea*, x 1.5. 2. *Septobasidium sabalis*, x ½.

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INDEX TO GENERA AND SPECIES

The Albert Commons Collection of Fungi in the Herbarium of the Academy of Natural Sciences in Philadelphia, Part II

David R. Sumstine and L. K. Henry
(*Carnegie Museum, Pittsburgh 13, Pennsylvania*)

A list of the Hyphomycetes, collected by Albert Commons mostly in Delaware and determined by J. B. Ellis, was published in Mycologia 41: 11–23, 1949. A similar list of the remaining Fungi Imperfecti was partially prepared at the same time, but for various reasons was not completed until recently. The present list includes specimens in the orders Sphaeropsidales and Melanconiales. The usual data are given for each specimen—the name, the collection number, the host, the place, and the date. Occasionally other information that seemed pertinent is also added. When the specimen is listed as a new species, citation of the publication is given.

The Commons Collection includes many fungi from other groups and the total number from all groups is more than 4000 specimens. All the specimens have been placed in packets, with appropriate labels, and arranged in museum cases at the Academy of Natural Sciences, Philadelphia, Pa. They are now available for study by mycologists.

We are especially indebted to Miss Dorothy E. Long, Assistant Curator of Botany of the Carnegie Museum, for typing the material and helping with the reading of proof.

SPHAEROPSIDALES

Family Sphaerioidaceae. 1. *Amerosporium euonymii* E. & E., n. sp., (1045), on *Euonymus americanus*, Wilmington, Nov. 1, 1889; no publication. 2. *Actinonema rosae* (Lib.) Fr. (=*Asteroma rosae* DC.), (2379), on cultivated rose, Wilmington, May 28 and Dec. 11, 1893. 3. *Ascochyta asclepiadis* E. & E., n. sp., (2420), on *Asclepias cornuti*, Pleasant Hill, May 1894, Proc. Acad. Phil. 46: 364. 1894; also (2512) from Stanton, Aug. 1, 1894. 4. *Ascochyta dicentrae* E. & E., n. sp., (no number) on *Dicentra spectabilis*, Wilmington, July 8, 1889; no publication. 5. *Ascochyta pisi* Lib., (2470), on *Vesca sativa*, Kimensi, July 4, 1894. 6. *Ascochyta plantaginis* Sacc. & Speg., (946), on *Plantago major*, Wilmington, Oct. 19, 1889. 7. *Asteroma graminis* Westd., (1065), on *Phragmites communis*, Wilmington, Nov. 5, 1889. 8. *Asteroma rosae* DC., (1702), on rose leaves, Wilmington, Oct. 1890. 9. *Asteroma* sp., (2635), on *Penthorum sedoides*, Wilmington, Oct. 27, 1894. 10. *Coniothyrium concentricum* (Desm.) Sacc., (no number), on *Yucca filamentosa*, Greenbank, Nov. 8, 1889; also (26) from Faulkland, May 6, 1885.

11. *Cornularia hispidula* (Ell.) Sacc., (1254), on *Viburnum*, Wilmington, Feb. 18, 1890. 12. *Cornularia persicae* (Schw.) Sacc. [=*Sphaeronema persicae* (Schw.) Ell.], (1098), on *Prunus americana*, Wilmington, March 24, 1890, and Dec. 3, 1889. 13. *Cytospora aculeans* Schw., (2447), on *Rhus copallina*, Smyrna, June 18, 1894; also *Stilbum rhois* B. & C. 14. *Cytospora nivea* (Hoff.) Sacc. [*Spermo-*

gonia of *Valsa nivea* (Hoff.) Fr.], (2087), on *Salix humilis*, Newark, N. J., July 7, 1893. 15. *Cytospora rhoina* Fr., (1325), on *Rhus glabra*, Wilmington, Dec. 10, 1889. 16. *Cytospora* sp., (2753), on *Liriodendron*, Naaman's Creek, Nov. 12, 1895; also (2307) on *Alnus serrulata*, Newark, N. J., Sept. 8, 1893. 17. *Cytospora* sp., (2233), on *Negundo aceroides*, Granogue, Aug. 18, 1893. (Compare *Cytospora negundinis* E. & E., Proc. Acad. Phil. 46: 360. 1894.) 18. *Darluca filum* (Biv.) Cast., (468), on *Carex stricta*, Faulkland, Oct. 13, 1886; also (358) on *Phragmidium* sp., Faulkland, Sept. 17, 1886; also (2440) on *Caeoma nitens*, Smyrna, June 9, 1894. 19. *Diplodia quercina* Westd., (1059), on Bartram oak, Wilmington, Sept. 20, 1889.

20. *Diplodia ramulicola* Desm., (1048), on *Euonymus americanus*, Wilmington, Nov. 1, 1889. 21. *Diplodia zeae* Lev., (1731), on *Zea mays*, Wilmington, Oct. 15, 1890. 22. *Diplodina ellisii* Sacc. (= *Diplodia hyalospora* Cke. & E.), (969), on *Asparagus officinalis*, Wilmington, Aug. 23, 1889; possibly this is *Vermicularia liliacearum*. 23. *Diplodina koeberliniae* E. & E., n. sp., (869), on *Koeberlinia spinosa*, mesas, Arizona, June 30, 1881, collected by C. G. Pringle, Jour. Myc. 4: 123. 1888. 24. *Fusicoccum tiliae* E. & E., n. sp., (2517), Naaman's Creek, Aug. 15, 1894, Proc. Acad. Phil. 46: 359. 1894. 25. *Hendersonia celtidis* E. & E., n. sp., (no number), West Chester, Pa., Dec. 1887, Jour. Myc. 4: 102. 1888. 26. *Hendersonia collapsa* C. & E., (814), on hickory, Faulkland, March 26, 1887. 27. *Hendersonia foliorum* Fckl., (1844), on *Crataegus coccinea*, Wilmington, Oct. 9, 1891; also (153) on *Pyrus malus*, Faulkland, Aug. 26, 1885 and 1888. 28. *Hendersonia staphyleae* E. & E., n. sp., (1939), on *Staphylea trifolia*, Wilmington, Apr. 19, 1892, Jour. Myc. 1: 151. 1885; also Proc. Acad. Phil. 45: 162. 1893. 29. *Hercospora tiliae* (Fr.) Tul. [= *Dichomera tiliae* (Therry) Sacc.] and *Rabenhorstia tiliae* Fr., (2042), both on *Tilia americana*, Mt. Cuba, June 22, 1893.

30. *Myxosporium nitidum* B. & C., (no number), on *Cornus alternifolia*, Wilmington, June 29, 1893. 31. *Phleospora mori* (Lev.) Sacc. (=*Septoria mori* Lev.), (929 a, b, c), on *Morus alba*, Wilmington, July 18, 1889. This has been transferred to *Septoria*. 32. *Phleospora caricis* E. & E., n. sp., (466), on *Carex angustata*, Faulkland, Nov. 16, 1886, Jour. Myc. 3: 88. 1887, and 4: 49. 1888. 33. *Phleospora carcicis* E. & E., n. sp., (501), on *Carex latifolia*, Faulkland, Aug. 27, 1887; also *Ramularia* sp. and *Sphaerella* sp. 34. *Phoma asclepiadea* E. & E., n. sp., (2556), on *Asclepias cornuti*, Stanton, Aug. 28, 1894, Field Columb. Mus. 1: 107. 1896. 35. *Phoma cacti* Berk., (2020), on *Cereus* sp., Mt. Cuba, June 22, 1893. 36. *Phoma cimicifuga* B. & C., (1773), on *Cimicifuga*, Wilmington, Apr. 3, 1891. 37. *Phoma concentricum* Desm., (no number), on *Yucca filamentosa*, Greenbank, Aug. 30, 1887; also one other specimen. 38. *Phoma concentricum* Desm., (279), on *Yucca* sp., Faulkland, Apr. 12, 1886; also (23) from Faulkland, July 28, 1885. 39. *Phoma glandicola* (Desm.) Lev., (954), on decaying acorn, Wilmington, Aug. 13, 1889.

40. *Phoma graminella* Sacc., (1861), on *Eragrostis pectinacea*, Pennsville, N. J., Oct. 15, 1891. 41. *Phoma lacustris* Karst., (970), on *Scirpus lacustris*, Wilmington, Aug. 23, 1889. 42. *Phoma nebulosa* (Pers.) Mont., (800), on *Cacalia atriplicifolia*, Faulkland, March 9,

1887. 43. *Phoma negundinis* Thüm., (2230), on *Negundo aceroides*, Granogue, Aug. 18, 1893. 44. *Phoma phytolaccae* B. & C., (1064), on *Phytolacca decandra*, Wilmington, Nov. and Dec. 1889. 45. *Phoma samararum* Desm., (484), on *Fraxinus americana*, Faulkland, May 2, 1887. 46. *Phoma tecomae* Sacc., (2623), on *Tecoma radicans*, Newport, N. J., Oct. 11, 1894. 47. *Phoma uvicola* B. & C., (924), on grapes, Wilmington, July 1889. 48. *Phoma* sp. on various hosts; nine unnamed, one unnumbered, others numbered 963, 1229, 1323, 1349, 1350, 1907, 2064, and 2256. 49. *Phyllosticta abortiva* E. & K., (399), on *Menispermum canadense*, Faulkland, Oct. 4, 1887.

50. *Phyllosticta acericola* C. & E., (556 and 557), on *Acer.*, Faulkland, July 27, 1887; also two other specimens. 51. *Phyllosticta affinis* E. & K. [=*Gloeosporium sassafras* (Cke.) E. & E.], (1869), on *Sassafras officinale*, Proc. Acad. Phil. 46: 371. 1894, Am. Nat. 17: 1165, 1883, and N. Am. Phyll. 43. 52. *Phyllosticta ailanthi* Sacc., (2617), on *Ailanthus glandulosa*, Kimensi, Oct. 8, 1894. 53. *Phyllosticta alnigena* Thüm., (614), on *Alnus serrulata*, Faulkland, Aug. 14, 1887. 54. *Phyllosticta althaeina* Sacc., (129), on *Sida spinosa*, Sept. 29, 1885. 55. *Phyllosticta ambrosioides* Thüm., on *Chenopodium*, Wilmington, Oct. 8, 1894; also (305) from Faulkland, Aug. 16, 1886. 56. *Phyllosticta ampelopsidis* E. & M. [=*P. viticola* (B. & C.) Thüm.], (55), on *Ampelopsis quinquefolia*, Wilmington, Sept. 19, 1889; also another specimen. 57. *Phyllosticta antennariae* E. & E., n. sp., (516), on *Antennaria plantaginifolia*, Faulkland, June 3, 1887, Jour. Myc. 4: 9. 1888; also Wilmington, Oct. 19, 1889. 58. *Phyllosticta aplectri* E. & E., n. sp., (2408), on *Aplectrum hyemale*, Naaman's Creek, Apr., 1894, Proc. Acad. Phil. 46: 356. 1894. 59. *Phyllosticta asclepiadearum* Westd., (2511), on *Asclepias cornuti*, Stanton, July 13, 1894.

60. *Phyllosticta asiminae* E. & K., (1457), on *Asimina triloba*, Wilmington, June 17, 1890. 61. *Phyllosticta berberidis* Rab., (679), on *Berberis vulgaris*, Faulkland, Oct. 3, 1887. 62. *Phyllosticta calthae* E. & E., n. sp., (2693), on *Caltha palustris*, Naaman's Creek, May 9, 1893; no publication. 63. *Phylloticta caprifolii* Sacc., (943), on *Lonicera japonica*, Wilmington, Aug. 2, 1889. 64. *Phyllosticta caryae* Peck, (124), on *Carya tomentosa*, Faulkland, Sept. 24, 1885; also *Pestalozzia macrospora* Ces. 65. *Phyllosticta caryogena* var. *subfusa* (=*P. caryae* Peck), (951), on *Carya*, Wilmington, Aug. 13, 1889. 66. *Phyllosticta catalpae* E. & M., (1805), on *Catalpa bignonioides*, Wilmington, Aug. 6, 1891. 67. *Phyllosticta chimaphilae* E. & E., n. sp., (479), on *Chimaphila umbellata*, Wilmington, July 21, 1890; also (2032) from Laurel, June 15, 1893; no publication. 68. *Phyllosticta commonsii* E. & E., n. sp., (922), on *Paeonia*, Wilmington, June 24, 1889, Jour. Myc. 5: 146. 1889; also 3 other collections. 69. *Phyllosticta cruenta* Fr. (=*P. convallariae* Pers.), on *Polygonatum biflorum*, Wilmington, Sept. 9, 1889; also (46) from Faulkland, Aug. 5, 1885, and (47) July 18, 1885.

70. *Phyllosticta decidua* E. & K., (2664), on *Nepeta catena*, Stanton, July 9, 1894; also on *Geum*, Wilmington, May 5, 1890. 71. *Phyllosticta ebuli* (Fckl.) Sacc. (=*P. sambuci* Desm.), (1074), on *Sambucus canadensis*, Wilmington, Nov. 5, 1889; also (same number) from Stanton, Aug. 1, 1894. 72. *Phyllosticta euonymi* Sacc., (2484), on *Euonymus atropurpureus*, Stanton, July 4, 1894. 73. *Phyllosticta euonymi* var.

microcarpa E. & E., n. var. (=*P. pallens* E. & E.), (1035), on *Euonymus americanus*, Wilmington, March 12, 1890, N. Am. Phyll. 44; also three other specimens. 74. *Phyllosticta fatiscens* Peck, (300), on *Nuphar advena*, Wilmington, Aug. 17, 1888. 75. *Phyllosticta gaultheriae* E. & E. (?=*Venturia gaultheriae* E. & E.), (313), on *Gaultheria procumbens*, Mt. Cuba, Aug. 19, 1886, Jour. Myc. 1: 153. 1885. 76. *Phyllosticta gentianaecola* (DC.) E. & E., (727 and 728), on *Gentiana* sp., Faulkland, Oct. 17, 1887; possibly *Cercospora gentianaecola* E. & E., n. sp., N. Am. Phyll. 59. 1900. 77. *Phyllosticta hamamelidis* (Cke.) Mart., (462), on *Hamamelis virginiana*, Faulkland, Oct. 15, 1886; also three other specimens. 78. *Phyllosticta heraclei* E. & D., (2786), on *Heracleum lanatum*, Stanton, Oct. 20, 1896. 79. *Phyllosticta hibiscina* E. & E., (1004), on *Hibiscus moscheutos*, Pennsgrove, Sept. 19, 1889, Jour. Myc. 4: 9. 1888; also Wilmington, Sept. 17, 1892.

80. *Phyllosticta kalmicola* (Schw.) E. & E. (=*Depazea kalmicola* Schw.), (1), on *Kalmia latifolia*, Faulkland, June 1885; also (482) from Wilmington, Apr. 7, 1887. (Note: Peck determined this as *Septoria*.) 81. *Phyllosticta labruscae* Thüm. [=*P. viticola* (B. & C.) Thüm.], (286), on *Vitis cordifolia*, Faulkland, July 12, 1886. 82. *Phyllosticta linderae* E. & E., n. sp., (676), on *Lindera benzoin*, Faulkland, Oct. 13, 1887, Jour. Myc. 4: 9, 1888; also three unnumbered specimens and No. 2154 from Faulkland, Oct. 3, 1887. 83. *Phyllosticta liriodendri* Cke., on *Liriodendron tulipifera*, Wilmington, Aug. 2, 1889, N. Am. Phyll. 38. 1900. 84. *Phyllosticta magnoliae* Sacc., (1881), on *Magnolia glauca*, Laurel, Feb. 24, 1892. 85. *Phyllosticta maxima* E. & E. (=*P. rhododendrii* West.), (851), on *Rhododendron maximum*, Medford, Mass., July-Aug. 1879, N. Am. Phyll. 9. 1900. 86. *Phyllosticta minima* (B. & C.) E. & E., (1), on *Acer rubrum*, Wilmington, Aug. 21, 1882. 87. *Phyllosticta negundinis* Sacc. & Speg., (979), on *Negundo aceroides*, Wilmington, Aug. 22, 1899. 88. *Phyllosticta nyssae* Cke., (406), on *Nyssa multiflora*, Faulkland, Oct. 6, 1886; also four other specimens. 89. *Phyllosticta orbicularis* E. & E., n. sp., (745), on pumpkin, Faulkland, Sept. 1887, Jour. Myc. 5: 10. 1888, and N. Am. Phyll. 68. 1900.

90. *Phyllosticta opuntiae* Sacc. & Speg., (62), on *Opuntia vulgaris*, Faulkland, June 1, 1885. 91. *Phyllosticta ostrospora* Sacc., (464), on *Morus rubra*, Faulkland, Oct. 15, 1886. 92. *Phyllosticta phomiformis* Sacc., (2629), on *Quercus alba*, Faulkland, Oct. 18, 1894. 93. *Phyllosticta photiniae* E. & E. (=*P. heteromeles* Cke. & Hark.), (899), on *Photinia arbutifolia*, "San Bardino," Calif. 94. *Phyllosticta podophylli* (Curt.) Wint., (513), on *Podophyllum peltatum*, Wilmington, May 29, 1890; also one other collection. 95. *Phyllosticta pyrina* Sacc. (=*Coniothyrium pyrinum*), (153 and 116), on *Pyrus*, Oct. 23, 1885, Torreya 7: 143, and N. Am. Flora 6: 84. 1922. 96. *Phyllosticta pyrolae* E. & E., n. sp., (906), on *Pyrola rotundifolia*, Centerville, July 1873, and Newark, N. J., July 7, 1873, Jour. Myc. 5: 145. 1889. 97. *Phyllosticta quercus* Sacc. & Speg., (902), on *Quercus chrysolepus*, Santa Rita Mts., Arizona, July 8, 1881. 98. *Phyllosticta roumeguerii* Sacc., (2616), on *Viburnum prunifolium*, Wilmington, Sept. 9, 1894. 99. *Phyllosticta serotina* Cke., (450), on *Prunus serotina*, Faulkland, Oct. 18, 1886.

100. *Phyllosticta sphaeropsidea* E. & E. (=*P. paviae* Desm.), (523), on *Aesculus hippocastanum*, Faulkland, July 1, 1887, Bull. Torrey Club 10: 97. 1883, and N. Am. Phyll. 41. 1900. 101. *Phyllosticta syriaca* Sacc., (625), on *Hibiscus* sp., Faulkland, Aug. 18, 1887. 102. *Phyllosticta tiliae* Sacc. & Speg., on *Tilia americana*, Wilmington, July 21, 1890. 103. *Phyllosticta tuberosa* E. & M., (380), on *Asclepias incarnata*, Faulkland, Sept. 24, 1886; also numbers 2527, 2538, and one unnumbered specimen. 104. *Phyllosticta villosa* E. & E., (2634), on *Rubus villosus*, Wilmington, Oct. 26, 1894. 105. *Rabenhorstia tiliae* (Fr.) E. & E. (=pycnidia of *Melanconium filiae* Peck), (2518), on *Tilia americana*, Naaman's Creek, Aug. 15, 1894; also (2122) from Mt. Cuba, June 28, 1893. 106. *Septoria alliorum* Westd., (2775), on *Allium tricoccum*, Granogue, May 15, 1896. 107. *Septoria anemones* Desm., (478), on *Anemone hepatica*, Wilmington, Dec. 19, 1889; also two other specimens. 108. *Septoria astericola* E. & E., n. sp., (723 and 724), on *Aster cordifolia;* type from Wisconsin, Jour. Myc. 5: 150. 1889; no locality or date given. 190. *Septoria atriplicis* (Westd.) Fckl., (1073), on *Atriplex patula*, Wilmington, Nov. 1, 1889; also one (no number) from Collin's Bank, July 28, 1891.

110. *Septoria atropurpurea* Peck, (724), on *Aster cordifolia*, Faulkland, Oct. 17, 1887. 111. *Septoria betulicola* Peck, (2412), on *Betula lenta*, Granogue, Aug. 18, 1893. 112. *Septoria brunellae* E. & H., (652), on *Brunella vulgaris*, Faulkland, Sept. 1, 1887. 113. *Septoria brunneola* (Fr.) Niessl. (=*S. smilacinae* E. & M.), (2090), on *Smilacina racemosa*, Wilmington, June 29, 1893. 114. *Septoria cacaliae* E. & K., (57), on *Cacalia atriplicifolia*, Faulkland, July 24, 1885; also (342) from Faulkland, Sept. 17, 1886. 115. *Septoria cardaminicola* E. & E., n. sp., (1365), on *Cardamine rhomboidea*, Wilmington, Apr. 10, 1890; no publication. 116. *Septoria caryae* E. & E., n. sp., (400), on *Carya* sp., Faulkland, Oct. 6, 1886, Jour. Myc. 3: 80. 1887. 117. *Septoria carpogena* E. & E., n. sp., (1922), on *Celtis occidentalis*, Mt. Cuba, Apr. 20, 1892, Proc. Acad. Phil. 45: 165. 1893. 118. *Septoria celtisgallae* Ger., (370), on insect galls on *Celtis occidentalis*, Faulkland, Sept. 9, 1886. 119. *Septoria cerasina* Peck, (36), on *Prunus serotina*, Faulkland, Nov. 6, 1885; also No. 220, Faulkland, Sept. 18, 1885, and one unnumbered specimen from Kirkwood, Oct. 17, 1894.

120. *Septoria cerastii* Rob. & Desm. (2768), on *Cerastium vulgatum*, Naaman's Creek, Nov. 29, 1895; also (1419) from Newark, N. J., May 21, 1890. 121. *Septoria chimophilae* E. & E., n. sp., (515), on *Chimophila maculata*, Faulkland, July 1887, Jour. Myc. 3: 85. 1887. 122. *Septoria cirsii* Niessl., (107), on *Cnicus altissimus*, Faulkland, July 20, 1885; also No. 137 from Faulkland, Aug. 26, 1885, and one unnumbered specimen, Aug. 20, 1885. 123. *Septoria commonsii* E. & E., n. sp., (107), on *Cnicus altissimus*, Faulkland, Aug. 1885, Jour. Myc. 5: 150. 1889; also (137) from Kimensi, Oct. 8, 1894. 124. *Septoria conspicua* E. & E., n. sp., (306), on *Steironema ciliatum*, Faulkland, Aug. 16, 1886, Jour. Myc. 3; 64. 1887. 125. *Septoria convolvuli* Desm., (600), on *Convolvulus nudiflora*, Faulkland, Aug. 8, 1887. 126. *Septoria cornicola* Desm., (274), on *Cornus florida*, Faulkland, Oct. 11, 1885; also (131) from Faulkland, Aug. 26, 1885, and (123) Sept. 28, 1885. 127. *Septoria cryptotaeniae* E. & Rau., (910), on *Cryptotaenia canaden-*

sis, Wilmington, Nov. 14, 1888, Jour. Myc. 3: 50. 1887; type from Pennsylvania. 128. *Septoria dulcamarae* Desm., (2655), on *Lycopersicum esculentum*, Wilmington, Nov. 2. 1894. 129. *Septoria epilobii* Westd., (72), on *Epilobium coloratum*, Faulkland, Sept. 19, 1885.

130. *Septoria erechitis* E. & E., n. sp., (1536), on *Erechtites hieracifolia*, Wilmington, Aug. 28, 1890, Proc. Acad. Phil. 43: 80. 1891. 131. *Septoria erigerontis* B. & C., (46), on *Solidago lanceolata*, Faulkland, July 6, 1885; also (285) on *Erigeron* sp., Faulkland, Aug. 6, 1885, and Oct. 1886. 132. *Septoria gummingena* E. & E., n. sp., (1105), on gum of cherry, Wilmington, Dec. 3, 1889, Proc. Acad. Phil. 43: 79. 1891. 133. *Septoria gentianae* Thüm., (1031), on *Gentiana saponaria*, Wilmington, Oct. 29, 1889. 134. *Septoria graminum* Desm., (1082), or young *Sphaerella*, on *Cinna arundinacea*, Wilmington, Oct. 22, 1889. 135. *Septoria gratiolae* Sacc. & Speg., (2787), on *Gratiola viscosa*, Wilmington, Sept. 8, 1894. 136. *Septoria humuli* Westd., (17), on *Humulus lupulus*, Faulkland, Aug. 10, 1884. 137. *Septoria hydrocotyles* Desm., (533), on *Hydrocotyle americana*, Faulkland, July 14, 1887; also on *H. umbellata*, Wilmington, Aug. 8, 1894. 138. *Septoria irregularis* Peck, (185), on *Rhus toxicodendron*, Stanton, Sept. 10, 1885. 139. *Septoria kalmicola* B. & C., (379), on *Kalmia latifolia*, Faulkland, Sept. 24, 1886; also from Wilmington, Dec. 19, 1889, and Faulkland, May 29, 1895.

140. *Septoria lepidiicola* E. & M., (369), on *Lepidium virginicum*, Faulkland, Sept. 20, 1886. 141. *Septoria leptostachyae* E. & K., (1486), on *Phryma leptostachya*, Wilmington, July 10, 1890. 142. *Septoria lobeliae* Peck, (314), on *Lobelia syphilitica*, Mt. Cuba, Aug. 19, 1886; also from Faulkland, Aug. 26, 1887, and Aug. 27, 1889. 143. *Septoria ludwigiae* Cke., (374), on *Ludwigia palustris*, Faulkland, Oct. 1886; also (2573) on *L. sphaerocarpa*, Vandyke Station, Sept. 21, 1894. 144. *Septoria lysimachiae* Westd., (173), on *Steironema ciliatum*, Faulkland, Aug. 1886; also from Faulkland, No. 192, Aug. 15, 1885, an unnumbered specimen, Oct. 17, 1885, and No. 306, Aug. 13, 1886. 145. *Septoria maculosa* Ger., (404), on *Cuphea viscosissima*, Faulkland, Oct. 6, 1886; also Wilmington, Oct. 9, 1889. 146. *Septoria mimuli* E. & K., on *Mimulus ringens*, Newark, N. J., Sept. 8, 1893. 147. *Septoria moria* Lev. [= *Phleospora mori* (Sw.) Sacc.], (929), on *Morus alba*, Wilmington, July 18, 1889. 148. *Septoria oenotherae* Westd., (288), on *Oenothera* sp., Faulkland, Aug. 13, 1886, and Wilmington, July 11, 1890. 149. *Septoria pileae* Thüm., on *Laportea canadensis*, Faulkland, Aug. 13, 1886.

150. *Septoria plantaginea* var. *plantaginis-majoris* Sacc., (375), on *Plantago rugelii*, Faulkland, Sept. 18, 1886, and Oct. 28, 1887. 151. *Septoria punctoidea* Karst., (501), on *Carex*, Faulkland, May 1, 1887. 152. *Septoria ribis* Desm., (125), on *Ribes rubrum*, Faulkland, Aug. 25, 1885; also on *Ribes uva-crispa*, Faulkland, Oct. 21, 1885. 153. *Septoria riparia* Pass., (501), on *Carex* sp., Faulkland, May 1, 1887. 154. *Septoria rubi* Westd., (215), on *Rubus canadensis*, Faulkland, Sept. 17, 1885; four other specimens on this host from same locality, and (177) on *Rubus villosus* from Faulkland, Sept. 15, 1885; also three other specimens. 155. *Septoria rudbeckiae* E. & H., n. sp., (1033), on *Rudbeckia* sp., Wilmington, Oct. 19, 1889, Jour. Myc. 6: 33. 1891; also

(2653) on *Rudbeckia laciniata*, Wilmington, Nov. 2, 1894. 156. *Septoria scrophulariae* Peck, (68), on *Scrophularia nodosa*, Faulkland, Aug. 21, 1885; also (2707) from Mt. Cuba, June 19, 1895. 157. *Septoria sii* Rob. & Desm., (198), on *Cicuta maculata*, Faulkland, Sept. 8, 1885. 158. *Septoria smilacinae* E. & M., (46), on *Smilacina racemosa*, Faulkland, July 18, 1885; also two other specimens. 159. *Septoria smilacis* E. & M., (43), on *Smilax rotundifolia*, Wilmington, Aug. 2, 1889.

160. *Septoria solidaginicola* Peck, (2806), on *Solidago pilosa*, Georgetown, Aug. 26, 1897. 161. *Septoria sonchifolia* Cke., (2488), on *Sonchis asper*, Summit Bridge, July 10, 1894. 162. *Septoria specularіae* B. & C., (2978), on *Specularia perfoliata*, Wilmington, June 1, 1897. 163. *Septoria spicilispora* E. & E., n. sp., on *Euonymus* sp., (no number or date), Delaware, Jour. Myc. 8: 12. 1902. 164. *Septoria stellariae* Rob. & Desm., (2499), on *Stellaria media*, Mt. Cuba, July 19, 1894. 165. *Septoria symploci* E. & M., (2410), on *Symplocos tincoria*, Green Cove, Aug. 15, 1877. 166. *Septoria trillii* Peck, (2448), on *Trillium cernuum*, Wilmington, June 15, 1894. 167. *Septoria unicolor* Wint., (142), on *Lactuca canadensis*, Wilmington, Oct. 19, 1889. 168. *Septoria urticae* Desm. & Rob., (2507), on *Laportea canadensis*, Stanton, Aug. 1, 1894. 169. *Septoria verbascicola* B. & C., (397), on *Verbascum blattaria*, Faulkland, Aug. 24, 1886; also three other specimens.

170. *Septoria verbenae* Rob. & Desm., (2654), on *Verbena urticaefolia*, Wilmington, Nov. 2, 1894. 171. *Septoria viburni* Westd., (126), on *Viburnum prunifolium*, Faulkland, Sept. 11 and 24, 1885. 172. *Septoria violae* Westd., (296), on *Viola lanceolata*, Wilmington, Aug. 17, 1886; also two other specimens. 173. *Septoria wilsoni* Clint., (106), on *Chelone glabra*, Faulkland, Sept. 27, 1885. 174. *Septoria xanthii* Desm., (34), on *Xanthium strumarium*, Faulkland, July 25, 1885. 175. *Septoria* sp., on *Pyrus malus*, Delaware City, July 26, 1894; also on *Cnicus* sp., Oct. 4, 1887. 176. *Sphaerographium fraxini* (Peck) Sacc., (2016), on *Fraxinus* sp., Naaman's Creek, Nov. 14, 1892; also (1766) on *Quercus alba*, Wilmington, March 14, 1891. 177. *Sphaeropsis chionanthii* E. & E., n. sp. (compare with *S. diatrypea* C. & E.), (1235), on *Chionanthus virginicus*, Wilmington, Jan. 3, 1890; no publication. 178. *Sphaeropsis diatrypea* C. & E., (1172), on *Chionanthus virginicus*, Wilmington, Feb. 5, 1890. 179. *Sphaeropsis gleditschiicola* Cke., (775), on *Gleditsia triacanthos*, Faulkland, March 8, 1887.

180. *Sphaeropsis maclurae* Cke., (1203), on *Maclura aurantiaca*, Wilmington, Jan. 18, 1890. 181. *Sphaeropsis malorum* Berk., (661), on *Pyrus malus*, Faulkland, Sept. 15, 1887. 182. *Sphaeropsis menispermi* Peck, (395), and *Tubercularia menispermi* Schw., on *Menispermum canadense*, Faulkland, Oct. 6, 1886. 183. *Sphaeropsis mori* E. & E., n. sp., on *Morus*, Canada, Proc. Acad. Phil. 45: 457. 1893. 184. *Sphaeropsis parasitans* B. & Rav., (1301), on *Hypoxylon* sp., Wilmington, Jan. 27, 1890. 185. *Sphaeropsis purpurascens* E. & E., n. sp., (1901), on *Smilax*, Wilmington, Dec. 21, 1891; no publication. 186. *Sphaeropsis* sp., (1165), on *Acer rubrum*, Wilmington, Dec. 10, 1889. 187. *Stagnospora typhoidarum* (Desm.) Sacc., (1069), on *Iris pseudacorus*, Wilmington, Oct. 11 and Dec. 24, 1889. 188. *Vermicularia albomaculata* Schw., (621 a, b), *Gloeosporium liriodendri* E. & E., n. sp., Jour.

Myc. 3: 128. 1887, and *Ramularia liriodendri* E. & E., n. sp., Jour. Myc. 4: 2. 1888, on *Liriodendron tulipifera*, Faulkland, Aug. 19, 1887; also (2450) on *L. tulipifera*, Wilmington, June 15, 1894. 189. *Vermicularia circinans* Berk., (1622), on onion, Wilmington, Oct. 13, 1890.

190. *Vermicularia compacta* C. & E., (2513 and 2515), on *Tilia americana*, Naaman's Creek, Aug. 15, 1894; also (2303) on *Cicuta maculata*, Wilmington, Oct. 18, 1893, and (2302) Mt. Cuba, Sept. 20, 1893. 191. *Vermicularia dematium* (Pers.) Fr., (1906), on log of *Carya*, Wilmington, Dec. 10, 1891; also (599) on *Podophyllum peltatum*, Faulkland, Aug. 8, 1887; No. 11 on *Opuntia vulgaris*, Faulkland, June 1, 1885; No. 1904 on *Phryma leptostachya*, Wilmington, Dec. 21, 1891; No. 798 on *Juglans nigra*, Faulkland, Apr. 10, 1887; No. 911 on *Thaspium barbinode*, Wilmington, Nov. 4, 1888; No. 2355 on *Cryptotaenia canadensis*, Wilmington, Oct. 20, 1893; No. 2332 on *Impatiens fulva*, Newark, N. J., Oct. 10, 1893; and No. 1228 on *Iris pseudacorus*, Wilmington, Dec. 24, 1889. 192. *Vermicularia graminicola* Westd., (2571), on *Cenchrus* sp., Delaware City, Sept. 8, 1894. 193. *Vermicularia herbarum* Westd., (2413), on *Dianthus* sp., Wilmington, Apr. 1894. 194. *Vermicularia liliacearum* Westd., (2366), on *Hemerocallis fulva*, Mt. Cuba, Nov. 2, 1893; also (2774) on *Aplectrum hyemale*, Rockland, May 15, 1896; also numbers 24, 2043, 2044, 2078, 2079, and 2089, various hosts, places, and dates. 195. *Vermicularia maculicola* E. & E., n. sp., (627 b), on *Amelanchier canadensis*, Faulkland, Aug. 18, 1887 (no publication); also (628) on *Sanguinaria canadensis*, Faulkland, Aug. 18, 1887. 196. *Vermicularia petalicola* E. & E., n. sp., (2047), on *Liriodendron tulipifera*, Wilmington, June 29, 1893, Proc. Acad. Phil. 45: 456. 1893. 197. *Vermicularia platyspora* E. & E., n. sp., (129), on *Sida spinosa*, Faulkland, Sept. 30, 1886; no publication. 198. *Vermicularia subeffigurata* Schw., (1851), on *Saponaria officinalis*, Pennsville, N. J., Oct. 15, 1891. 199. *Vermicularia trichella* Fr., (1837), on *Celastrus scandens*, Wilmington, Oct. 1, 1891; also (77 and 197) on *Smilax herbacea*, Faulkland, Aug. 2, 1885.

200. *Vermicularia veratrina* E. & E., n. sp., (1458), on *Veratrum viride*, Wilmington, June 1890, Proc. Acad. Phil. 43: 78. 1891. 201. *Vermicularia* sp., numbers 276, 849, 2067, 2096, and 2119, various hosts, places, and dates.

Family NECTRIOIDACEAE. 1. *Sphaeronemella rufa* (Fr.) Sacc., (1197), on *Magnolia glauca*, Wilmington, Jan. 29, 1890. 2. *Zythia boleticola* E. & E., n. sp., (2050), on *Boletinus porosus*, Newark, N. J., July 7, 1893, Proc. Acad. Phil. 45: 457. 1893.

Family LEPTOSTROMATACEAE. 1. *Discosia artocreas* (Tode) Fr., (596), on chestnut leaves, Faulkland, Aug. 8, 1887; also (2443) on *Sassafras officinale*, Smyrna, June 9, 1894. 2. *Discosia artocreas* f. *polytrichii* E. & E., (987), on *Polytrichum commune*, Wilmington, Feb. 13, 1890. 3. *Discosia maculicola* Ger., (622), on *Agrimonia eupatoria*, Faulkland, Aug. 29, 1887, along with two other specimens; also (999), possibly *D. artocreas*, on *Sassafras officinale*, Wilmington, Aug. 29, 1889. 4. *Entomosporium maculatum* Lev., (87), on *Pyrus communis*, Faulkland, Aug. 6, 1885; also (2818) on *Cydonia vulgaris* (fruticulose form), Wilmington, Oct. 8, 1898. 5. *Entomosporium maculatum* var. *mespili*

(DC.) Sacc., (367), on quince, Faulkland, Sept. 9, 1886. 6. *Labrella pomi* Mont. & Fr., (654), on watermelon, Sept. 1, 1887; also one unnumbered specimen on apple, Faulkland, Aug. 6, 1887. 7. *Leptostroma filicinum* Fr., (2097), on *Dicksonia* sp., Naaman's Creek, July 10, 1893. 8. *Leptostroma herbarum* (Fr.) Link, (1773), on *Cimicifuga racemosa*, Wilmington, Apr. 3, 1891; also No. 1185 from Wilmington, Jan. 27, 1890. 9. *Leptostroma litigiosum* Desm. [=*Leptothyrium litigiosum* (Desm.) Sacc.], (1774), on *Osmunda cinnamomea*, Wilmington, May 8, 1891; also two other specimens.

10. *Leptostroma petiolorum* C. & E., (1777), on *Ailanthus glandulosa*, Wilmington, Apr. 1, 1891. 11. *Leptostroma pteriditis* Ehrbg., (1223), on *Pteris aqualina*, Wilmington, Dec. 19, 1889. 12. *Leptostroma vulgare* Fr. [=*Leptothyrium vulgare* (Fr.) Sacc.], (2070), on *Collinsonia canadensis*, Wilmington, June 29, 1893; also (799) on *Cacalia atriplicifolia*, Faulkland, March 19, 1887, and (2268) on *Staphylea trifolia*, Mt. Cuba, Sept. 20, 1893.

13. *Leptostroma* sp., (810), on *Yucca filamentosa*, Faulkland, Apr. 2, 1887; also (1925) on *Andropogon virginicus*, Newark, N. J., Apr. 7, 1892. 14. *Leptostromella filicina* (B. & C.) Sacc., on *Asplenium filix-foeminia*, Wilmington, July 28, 1893. 15. *Leptothyrium concentricum* Desm., on apple, Faulkland, Feb. 1886; immature specimen. 16. *Leptothyrium dryinum* Sacc., (980), on *Quercus palustris*, Wilmington, Aug. 27, 1889; also (989) on *Quercus alba*, Wilmington, Sept. 9, 1889; and (647) on *Quercus coccinea*, Faulkland, Aug. 25, 1887; also (1868) on *Castanea sativa* var. *americana*, Wilmington, Oct. 9, 1891; and numbers 930, 988, 993, 2119, and one unnumbered specimen, various hosts, places, and dates. 17. *Leptothyrium vulgare* (Fr.) Sacc., (2156), on *Aralia nudicaulis*, Wilmington, July 21, 1893; also (1467) on *Zygadenus lemnanthoides*, Newark, N. J., June 27, 1890; No. 2227 on *Aralia racemosa*, Granogue, Aug. 18, 1893; and numbers 540 and 1466. 18. *Piggotia fraxini* B. & C., (287), on *Fraxinus americana*, Faulkland, Aug. 13, 1886; also two other specimens.

Family EXCIPULACEAE. 1. *Dinemasporium graminum* Lev., or *D. microsporum* Sacc., (971), on *Scirpus lacustris*, Wilmington, Aug. 25, 1889. 2. *Dinemasporium graminum* Lev., (2052), on *Eleocharis tenuis*, Newark, N. J., 1893. 3. *Dinemasporium hispidulum* (Schrad.) Sacc., (1923), on *Asimina triloba*, Wilmington, March 26, 1892; also (1124) on *Morus alba*, Wilmington, Dec. 19, 1889, and (617) on old wood, Faulkland, Aug. 14, 1887. 4. *Dinemasporium orbiculare* B. & C., (1884), on *Ilex opaca*, Laurel, Feb. 24, 1892. 5. *Dinemasporium* sp. and *Vermicularia* sp., (1342), on *Fraxinus americana*, Wilmington, March 18, 1890. 6. *Psilospora faginea* Rabh. (=*Dichaena*, conidial form of this genus), (491), on *Fagus ferruginea*, Faulkland, March 26, 1887.

MELANCONIALES

Family MELANCONIACEAE. 1. *Cheirospora botryospora* Fr. (=*Thyrsidium*), (787), on *Cornus florida*, Faulkland, Apr. 17, 1887; also (531) from Faulkland, July 14, 1887. 2. *Colletotrichum lineola* Cda., (1895), on *Panicum crus-galli*, Wilmington, Dec. 3, 1891. 3. *Colletotrichum lineola* var. *sparsa* E. & M., ined., (338), possibly a *Vermicu-*

laria, on *Anychia dichotma*, Faulkland, Sept. 11, 1886. 4. *Colletotrichum rhexiae* E. & E., n. sp., (2534), on *Rhexia virginica*, Kimensi, Aug. 25, 1894, Proc. Acad. Phil. 46: 372. 1894. 5. *Cryptosporium epiphyllum* C. & Ell., (97), on *Castanea vulgaris*, Faulkland, Oct. 12, 1885. 6. *Cylindrosporium apocyni* E. & E., n. sp., (407), on *Apocynum androsaemifolium*, Faulkland, Oct. 8, 1886, Jour. Myc. 3: 22. 1887. 7. *Cylindrosporium clematidis* E. & E., n. sp., (235), on *Clematis virginiana*, Faulkland, Sept. 29, 1885, Jour. Myc. 3: 22. 1887. 8. *Cylindrosporium humili* E. & E., n. sp., (357), on *Humulus lupulus*, Faulkland, Sept. 17, 1886, Jour. Myc. 3: 21. 1887. 9. *Cylindrosporium mori*. E. & E., (187), on *Morus rubra*, Faulkland, Sept. 10, and (No. 88), Aug. 12, 1885.

10. *Cylindrosporium padi* Karst., (592), on *Prunus serotina*, Faulkland, Sept. 16, 1887; also another specimen from Faulkland, Aug. 8, 1887. 11. *Gloeosporium apocryptum* E. & E., n. sp., (2084), on *Negundo aceroides*, Wilmington, June 29, 1893, Jour. Myc. 4: 52. 1888. *G. apocryptum* var. *ramicolum* E. & E., Proc. Acad. Phil. 45: 459. 1893, based on Common's number 2084, but in herbarium labeled *Gloeosporium negundini* E. & E. 12. *Gloeosporium canadense* E. & E., n. sp., (2449), on *Quercus alba*, Wilmington, June 15, 1884, Jour. Myc. 5: 153. 1889; type from Canada. 13. *Gloeosporium castanicolum* E. & E., n. sp., (no number), Faulkland, Aug. 1887, Proc. Acad. Phil. 47: 435. 1895. 14. *Gloeosporium catalpae* E. & E., n. sp., (1804), on *Catalpa bignonioides*, Wilmington, Aug. 6, 1891, Jour. Myc. 7: 133. 1894. 15. *Gloeosporium coryli* (Desm.) Sacc., (620), Faulkland, Aug. 19, 1886, Jour. Myc. 1: 114. 1884, and Am. Nat. 18: 1264. 1884. 16. *Gloeosporium decolorans* E. & E., n. sp., (N. A. F. 2867), on *Acer rubrum*, London, Canada, Sept. 24, 1891, Jour. Myc. 7: 133. 1892. 17. *Gloeosporium diospyri* E. & E., n. sp., (606), on *Diospyros virginiana*, Faulkland, Aug. 10, 1887, Jour. Myc. 3: 129. 1887. 18. *Gloeosporium fructigenum* Cke. (=*G. versicolor* B. & C.), (115), on apple, Faulkland, Aug. 1, 1886. 19. *Gloesporium fructigenum* var. *maculans* Ell., n. var., (252), on apple, Faulkland, Aug. 1, 1886.

20. *Gloeosporium fusarioides* E. & K., (2468), on *Asclepias cornuti*, Stanton, July 4, 1894; also two other specimens. 21. *Gloeosporium juglandis* (Lib.) Mont., (194), on *Juglans nigra*, Faulkland, Aug. 26, 1885. 22. *Gloeosporium lagenarium* (Pass.) Sacc. & Roum. (=*G. peponis* B. & C.), on watermelon rind, Faulkland, Oct. 3, 1887; also another specimen. 23. *Gloeosporium lindemuthianum* Sacc. & Magn., (848), on butter bean, Wilmington, July 18, 1888. 24. *Gloeosporium liriodendri* E. & E., n. sp., (621 a, b), Faulkland, Aug. 19, 1887. Jour. Myc. 3: 128. 1887, refers to this collection; also *Ramularia liriodendri* E. & E., *ibid.*, Jour. Myc. 4: 2. 1888, refers to this collection in connection with *Vermicularia albomaculata* Schw. These two new species were found on the same leaf. 25. *Gloeosporium negundinis* E. & E., n. sp., (2084), on *Negundo aceroides*, Wilmington, July 29, 1893, Proc. Acad. Phil. 45: 459. 1893, and Jour. Myc. 4: 52. 1888.See also *Gloeosporium apocrytum* E. & E. 26. *Gloeosporium officinale* E. & E., n. sp., (2438), on *Sassafras officinale*, Smyrna, June 9, 1894, Proc. Acad. Phil. 46: 370. 1894. 27. *Gloeosporium ovalisporum* var. *oblongisporum* E. & E., (2441), on *Prunus serotina*, Smyrna, June 18, 1894,

Proc. Acad. Phil. 43: 83. 1891; also number 2439. 28. *Gloeosporium paludosum* E. & Gall., n. sp., (977), on *Peltandra virginica*, Wilmington, Sept. 4, 1889, Jour. Myc. 6: 32. 1890. Type is from Virginia, collected by D. G. Fairchild. Also another specimen. 29. *Gloeosporium phomoides* Sacc., (382), on tomato, Faulkland, Sept. 28, 1886; also two other specimens.

30. *Gloeosporium platani* (Mont.) Dud., (2502), on *Platanus occidentalis*, Newport, N. J., July 28, 1894. 31. *Gloeosporium podophyllinum* E. & E., n. sp., (2433), on *Podophyllum peltatum*, Wilmington, June 4, 1894, Jour. Myc. 4: 103. 1888; also (2092) from Naaman's Creek, May 10, 1893 and 1895, changed to *Septogloeum podophyllinum* (E. & E.) Sacc., Syll. Fung. 10: 497. 1892. 32. *Gloeosporium punctiforme* E. & E., n. sp., (287), on *Fraxinus americana*, Faulkland, Aug. 1887, Jour. Myc. 3: 21. 1887, changed to *G. commonsii* Sacc. & Syd., Syll. Fung. 14: 1013. 1899. 33. *Gloeosporium ribicolum* E. & E., n. sp., (1961), on *Ribes*, Wilmington, June 25, 1892, Proc. Acad. Phil. 45: 167. 1893. 34. *Gloeosporium salicis* Westd., (957), on *Salix*, Wilmington ton, Aug. 23, 1889. 35. *Gloeosporium serotinum* E. & E., n. sp., (2439), on *Prunus serotina*, Smyrna, June 18, 1894, Proc. Acad. Phil. 46: 371. 1894. 36. *Gloeosporium trifolii* Peck, (935), on *Trifolium pratense*, Wilmington, July 22, 1889. 37. *Gloeosporium versicolor* B. & C., (598), on mayapple, Faulkland, Aug. 8, 1887; also (115, = *G. fructigenum* Cke.) on apple, Faulkland, Aug. 1, 1886. 38. *Gloeosporium* sp. (no number), on apple, Wilmington, Dec. 1, 1889. 39. *Hainesia asclepiadicola* E. & E., n. sp., (2509), on *Ascelepias cornuti*, Stanton, July 13, 1894; no publication.

40. *Marsonia juglandis* (Lib.) Sacc., (2559), on *Juglans cinerea*, Stanton, Aug. 28, 1894. 41. *Melanconium concentricum* Peck [= *Coniothyrium concentricum* (Desm.) Sacc.], (9), on *Yucca filamentosa*, Faulkland, June 1, 1885; also a specimen from Greenbank, May 6, 1885. 42. *Myxosporium nitidum* B. & C., (441), on *Cornus alternifolia*, Faulkland, Oct. 21, 1886; also another specimen. 43. *Pestalozzia conigena* Lev., (352), on *Abies*, Faulkland, Sept. 17, 1886. 44. *Pestalozzia discosioides* E. & E., n. sp., (611), on rose leaves, Faulkland, Aug. 10, 1887, Jour. Myc. 4: 51. 1888; also two other specimens. 45. *Pestalozzia funerea* Desm., (956), on *Pteris aqualina*, Wilmington, Aug. 23, 1889. 46. *Pestalozzia guepinii* Desm., (1072), on *Kalmia latifolia*, Wilmington, Nov. 1, 1889. 47. *Pestalozzia jeffersii* Ell., (1157), on *Acer rubrum*, Wilmington, Jan. 10, 1890. 48. *Pestalozzia kalmicola* E. & E., n. sp., (481), on *Kalmia latifolia*, Wilmington, Apr. 7, 1887, Jour. Myc. 4: 51. 1888. 49. *Pestalozzia lycopodina* E. & E., n. sp., (2049), on *Lycopodium clavatum*, Naaman's Creek, July 1893, Proc. Acad. Phil. 45: 461. 1893.

50. *Pestalozzia pezizoides* DeNot., (945), on *Vitis*, Wilmington, July 25, 1889. (Compare *P. zabriskiana* Howe.) 51. *Pestalozzia polygoni* E. & E., n. sp., (2560), on *Polygonum virginianum*, Stanton, Aug. 28, 1894, Proc. Acad. Phil. 46: 374. 1894. 52. *Pestalozzia scirpina* E. & M., n. sp., (974), on *Scirpus lacustris*, Wilmington, Aug. 23, 1889, Am. Nat. 19: 76. 1885. 53. *Pestalozzia versicolor* var. *americana* Speg., (2330), on *Scirpus lacustris*, Wilmington, Oct. 9, 1893; also (2363) from Wilmington, Nov. 1, 1893.

Flowering of the Bamboo Guadua amplexifolia Presl in Puerto Rico

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Vegetative growth for many years prior to flowering, followed by death, occurs among certain groups of plants. The talipot palm (*Corypha umbraculifera* L.) and the century plant (*Agave americana* L.) live for a period of years, flower, and die after the seeds mature. The most striking and varied examples of this phenomenon, however, are found among certain of the Bambuseae. Although some bamboo species survive after flowering, the great majority grow for varying periods of time and die after blossoming. In addition, certain species exhibit gregarious flowering in which all plants, regardless of age, flower simultaneously and then die. The time necessary for flowering varies not only for the species of bamboo but also for the area in which they are grown. The reported life cycles vary from annual for *Guadua angustifolia* Kunth, to more than 80 years in the case of *Bambusa polymorpha* Munro (Arber, 1934). Intermediate periods such as 11 years for "Taquara" bamboos[1] (Pereira, 1941) and 20 to 40 years for *Dendrocalamus strictus* (Roxb.) Nees (Deogan, 1936) have been reported.

Three bamboo species, all of different genera, previously have been reported as having flowered in Puerto Rico. Chase, in 1914, reported flowering of *Arthrostylidium sarmentosum* Pilg., a native climbing species. She concluded that this species is herbaceous, dying down to the ground each year. *Guadua angustifolia* Kunth flowered and set a few fruits on 1- and 2-year old culms on the grounds of the Federal Experiment Station in 1944 and 1945. At the same location in 1945 and 1946, profuse flowering also occurred on clumps of *Bambusa arundinacea* Retz. (White, 1948). Both of these bamboos are introduced species; the former is found growing wild from Honduras to Paraguay, and the latter is indigenous to India.

Three other native climbing bamboos, in addition to *A. sarmentosum* have been collected in Puerto Rico, but the authors did not give any exact information about the length of time required for flowering (Britton and Wilson, 1923). They did state, however, that one of these, *Chusquea abietifolia* Griseb. flowers only after long intervals and dies.

In November, 1953, culms of *Guadua amplexifolia* Presl planted at this station in 1941[2] began to lose their leaves and to produce flower spikes. All of the leaves dropped by January, 1954, and the culms literally became gigantic inflorescences (figure 1). The flowers continued to open over a period of 3 months. All of the culms, in-

[1]The word "Tarquara" is the Brazilian vernacular term for any large strong bamboo suitable for use in construction.

[2]Plants of this species were received from the Plant Introduction Section, USDA, Washington, D. C., which had secured the material in 1938 from the Panama Canal Zone.

cluding the underground parts, died after fruit maturation. It is of interest that clumps of this species growing at two different locations and showing great variation in vegetative growth flowered simultaneously.

The flowers were borne in spikes which arise from the nodes, many thousand of flowers being produced per culm. Individual spikes generally consisted of 8 to 12 spikelets, each of which produced one fertile

FIG. 1. Clump of *Guadua amplexifolia* in full bloom, January 1954.

floret (figure 2). Most of the flowers were observed to open between 8 a.m. and noon, and to liberate large quantities of pollen. The floret closed about 1 to 2 hours after anthesis. The reproductive structures typically consisted of three feathery styles surmounting the ovary and six anthers each 5 to 7 mm. in length on long, slender filaments.

Pollen stained with one percent iodine and potassium iodide in 45 percent acetic acid and with aceto-carmine saturated in 45 percent acetic acid showed that approximately 80 percent of the grains were well formed, uniform in size, and capable of taking a dark stain.

In spite of the fact that many thousands of flowers were produced and that the pollen apparently was viable, fruit set was very low. Examination of thousands of spikelets yielded only 1003 fruits. Measurements of 100 fruits, which are caryopses similar in form and size to the common oat, gave an average length and width of 10.9 and 2.7 mm., respectively. Individual fruits, which averaged 0.03 grams in weight, were planted in sterilized soil in the greenhouse and gave less than one percent germination. Seedlings, together with a few volun-

teer plants which appeared under the clumps, have been placed in a nursery bed for eventual transplanting to a permanent location.

Since the original propagating material of *G. amplexifolia* was secured in 1938, the life cycle of this species is at least 16 years. No particular climatic factor could be associated in the flowering of this bamboo, as 35 other species were growing under the same conditions but failed to blossom. Seifriz (1923) concluded that periodic and gregarious flowering in bamboo is an inherent property of the species,

FIG. 2. Inflorescence of *Guadua amplexifolia* showing spikelet structure and expanded flowers.

but that climatic conditions may have some slight influence on the exact time of flowering. The establishment of the *Guadua amplexifolia* seedlings in a permanent location at the same site where flowering occurred in 1954 will permit the complete life cycle to be documented when this species flowers again.

SUMMARY

Plants of the tropical American bamboo, *Guadua amplexifolia* Presl flowered in Puerto Rico during the period November, 1953, to April, 1954. All culms, regardless of age or location, blossomed at the same time and then died after fruit maturation. The life cycle of this bamboo is at least 16 years, since the original propagating material was secured in 1938.

The flowers, which were borne in spikes, consisted of 6 stamens and 3 feathery styles. Fruit set was very low, although large quantities of apparently viable pollen were produced. Germination of the mature fruit also was found to be very poor.

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Reingestion in Three American Species of Lagomorphs

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Although reingestion has been suggested (3) to be a normal feature of lagomorph biology and it has been noted for two European species, *Oryctolagus cuniculus* (2) and *Lepus europaeus* (3), this phenomenon has been observed in American species in only a single specimen of the swamp rabbit, *Sylvilagus palustris paludicola* (1). Reingestion (or refection) is the process by which some food passes twice or more through the alimentary tract. The domestic rabbit and related species apparently produce special soft, or even semi-liquid, feces which they consume directly from the anus. As a portion of a more comprehensive study on the biology of the sub-family *Leporinae*, observations on ingested soft feces were made on a number of American species.

Sufficient data have been accumulated to report on three species, including both captive (caged) and collected (wild) animals. These species are *Lepus townsendii campanius* Hollister (prairie hare), *Lepus americanus virgineanus* True (Virginia varying hare), and *Sylvilagus transitionalis* (Bangs) (cottontail). A total of 172 adults of both sexes, 72 captive and 100 collected, was examined and found to contain soft feces in their recta (Table 1). All of the collected animals were from either Massachusetts, New York, or New Hampshire. The captive hares had been maintained on a pelletted, commercial rabbit food for at least three weeks prior to examination.

Failure to remove adequate samples from the proper region of the stomachs of living animals by means of a siphon made it necessary to kill them and to conserve the stock by taking samples only every four hours rather than at more frequent and desirable intervals. For the purpose of these tests the time intervals commenced at 1:00 A.M. and continued around the clock. Difficulties experienced in handling more than five animals at a time made examinations at different dates necessary. Data from the collected animals are included only where they had been taken within one hour of the times the captive ones were killed.

Microscopic examination of the soft feces from the recta and of material from the oesophagic ends of stomachs revealed striking similarities in floras and compositions from these regions for a number of animals killed between 9:00 A.M. and 5:00 P.M. One of the criteria employed for the fecal origin of material from the stomachs was the same as used by Watson and Taylor (3) in their report of the first case of reingestion in the hare, *Lepus*. This test was based on the presence of comparable numbers of oöcysts of intestinal coccidia at

[1]Materials were collected and preserved while author was a member of the staffs of the University of Massachusetts, and Smith College Genetics Experiment Station; most of the microscopical examinations were performed at present address. The author acknowledges with appreciation the critical reading of the manuscript by Dr. Philip Hershkovitz of the Chicago Natural History Museum.

TABLE 1.—*Reingestion in Three American Species of Leporinae.*

Time of Day	*Lepus townsendii campanius* (Captive)		*Sylvilagus transitionalis* (Collected)		*Lepus americanus virgineanus*				Totals for the 3 Species					
					(Captive)		(Collected)		(Captive)		(Collected)		(All)	
	Number Examined	Number Showing Reingestion	Number Examined	Number Showing Reingestion	Number Examined	Number Showing Reingestion	Number Examined	Number Showing Reingestion	Number Examined	Number Showing Reingestion	Number Examined	Number Showing Reingestion	Number Examined	Number Showing Reingestion
1 A.M.	5	0	10	0	3	0	8	0	8	0	18	0	26	0
5 A.M.	7	0	8	1	4	0	5	1	11	0	13	2	24	2
9 A.M.	8	2	4	1	7	3	3	1	15	5	7	2	22	7
1 P.M.	11	8	5	5	6	5	3	3	17	13	8	8	25	21
5 P.M.	5	0	9	1	6	1	14	4	11	1	23	5	34	6
9 P.M.	6	0	15	0	4	0	16	0	10	0	31	0	41	0
Totals	42	10	51	6	30	9	49	7	72	19	100	17	172	36
Percentage		23.8		11.8		30.0		14.3		26.4		17.0		20.9

both ends of the alimentary tract. Another test involved comparisons of the structure and relative breakdown of the detritus and stomach material.

Reingested material was found only in animals killed during daylight hours. One hare and one rabbit collected in the early morning (5:00 A.M.) gave evidence of ingesting feces, but none of the captive animals killed at the same hour apparently had ingested fecal material. Almost one-half of the animals killed between 9:00 A.M. and 5:00 P.M. contained soft feces in their stomachs, and 21 out of 25 of these killed at 1:00 P.M. yielded evidence of reingestion. Soft feces were found in 26 percent of the captive hares but in only 17 percent of the collected animals. Approximately the same percentages of collected hares and rabbits demonstrated reingestion. No well formed food pellets, as described by Hamilton (1) from the stomach of the swamp rabbit, were found in any animal examined.

These three species of American Leporinae: *L. townsendii campanius*, *L. americanus virgineanus*, and *S. transitionalis*, have a diurnal rhythm concerned with the reingestion of a special, amorphous feces that is well defined and apparently similar to the coprophagy reported for two European lagomorphs.

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New genera, species, etc., are indicated by *italics*.